

BEST AVAILABLE COPY

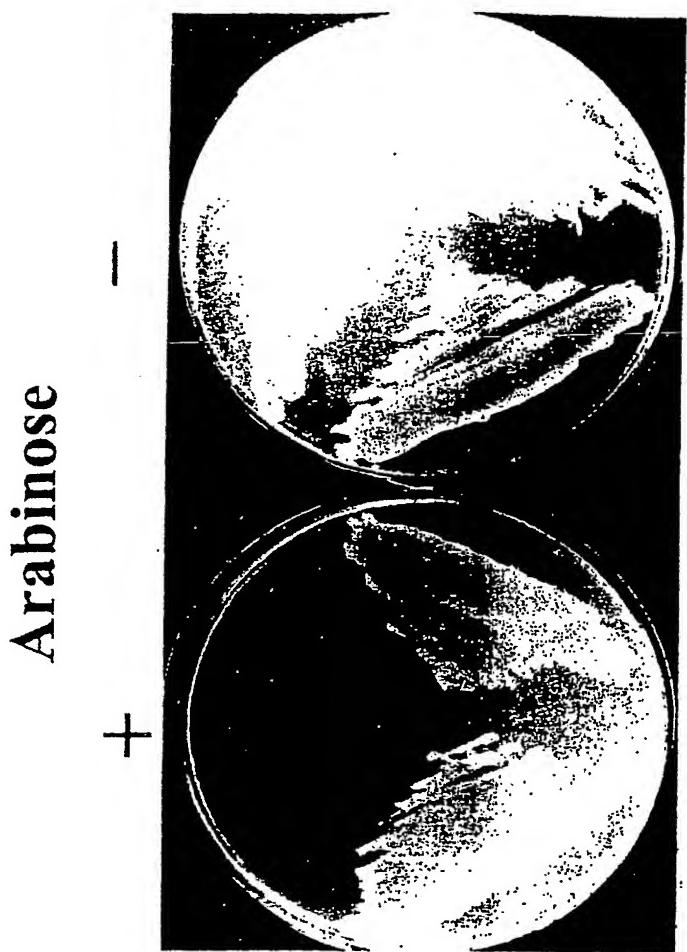


FIG. 1A

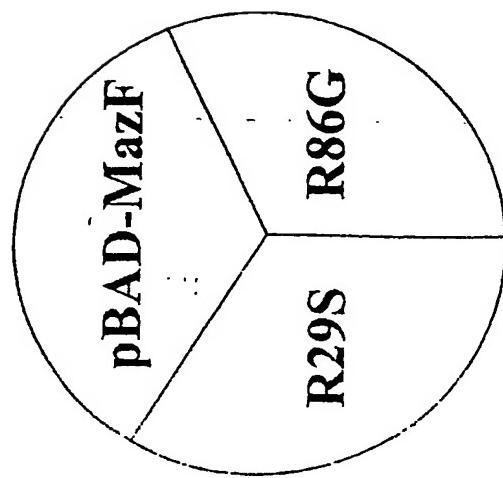


FIG. 1B

S

<i>E. coli</i>	1	-----MVSRYVPDMGDEIWVDFDPTKGSEQAGHRFAVVLSPFMYNNKTG-----MCLCVP
<i>B. halodurans</i>	1	-----MPVPDRGNILVYVDENHQSGHDQAGSTRALVLSPLFNKNTG-----FAWCP
<i>S. epidermidis</i>	1	-----MIRRGDVYLADLSFVGSEQQGVRFVVIIONITGNKYSP-----TVIVAA
<i>S. aureus</i>	1	-----MIRRGDVYLADLSFVGSEQQGVRFVVIIONITGNKYSP-----TVIVAA
<i>B. subtilis</i>	1	-----MIVKRGDVYFADLSFVVFVSEQGVRFVVIIONLIGNRESP-----TAIVAA
<i>N. meningitidis</i>	1	-----MYIPDKGDIIEHNEDESSGKIKVIGFALALPKAFURARG-----LVFACP
<i>M. morganii</i>	1	MRRRLVRRKSDMERGEIWLVSLDITAHFELQHTFIVLIVTPAAFEIRVIR-----LEVVVP
<i>M. tuberculosis</i>	1	MMRGEIWOVDLDPARGEANNOKEAVV:INRANATATRLGRGVITVVP

G

<i>E. coli</i>	51	CUTOS--KGYPFEVVL-----QERDGVALADCVKSIAWRAP-GATKKGTVAPEELQLIKA
<i>B. halodurans</i>	48	IIRCO--KGYPFEIEIPP---GLPIEVILTDQVKSLEWRAPNFHIKGQAPEETVTDCLQ
<i>S. epidermidis</i>	46	ITDGINKAKIETHVEIEKKKYKLDKLSVILLQEIPTLIK-KRLKEKIITFLSESKNIEVDN
<i>S. aureus</i>	46	ITGRINKAKIETHVEIEKKKYKLDKLSVILLQEIPTLIK-KRLKEKIITYLSDDKMKEVDN
<i>B. subtilis</i>	47	ITAQIQKAKLPTHEVIDAKRYGEERHSVILLEQIPTIILK-QRLTDKITHLDDEMIDKVDE
<i>N. meningitidis</i>	48	ISQGNAAAARSSGMISTLLGAGTETQGNVHCILKSLLWQIKASFKEWPDYVLDDVLA
<i>M. morganii</i>	56	VTSGGN-EARTAGEFAVSLDGAGIRTGWRCDGPFTEIMKAFGGKRERVPETIMDDVLG
<i>M. tuberculosis</i>	51	VTSNIA-KVYPFQVILLSATTGLOVDCKAQAEQIESIAT-EKLLRPIGRVSAEELAQDE

<i>E. coli</i>	105	KINVLI-----
<i>B. halodurans</i>	103	LIHTFLS-----
<i>S. epidermidis</i>	105	ALDISLGLNNFDHHKS-----
<i>S. aureus</i>	105	ALMISLGLNAVAQPEKLGVYYMYFSEINKILI
<i>B. subtilis</i>	106	ALQISLALIDF-----
<i>N. meningitidis</i>	108	RIGAVLF-----
<i>M. morganii</i>	115	RLATILT-----
<i>M. tuberculosis</i>	109	ALKLHLIDLWS-----

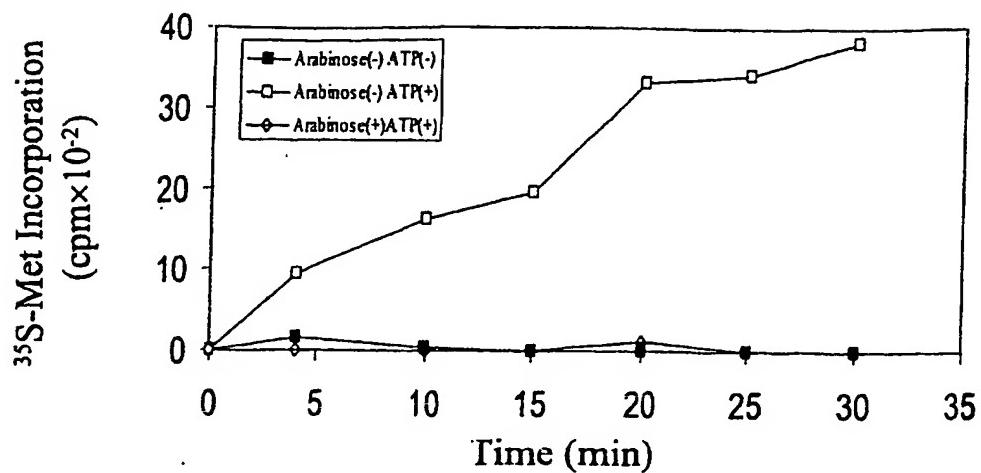


FIG. 2A

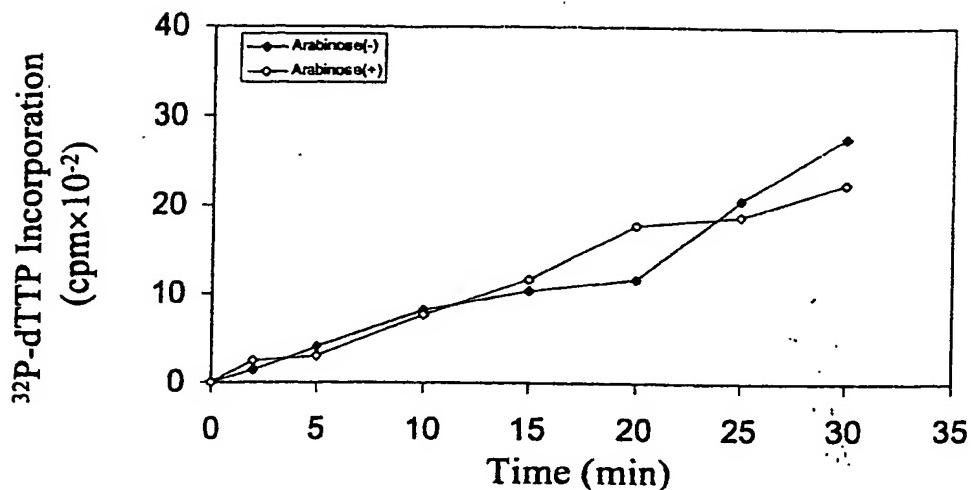


FIG. 2B

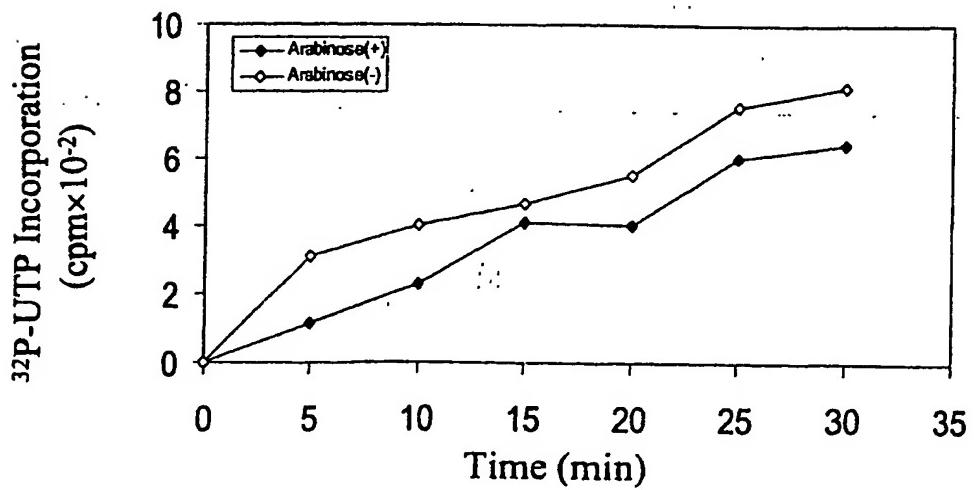


FIG. 2C

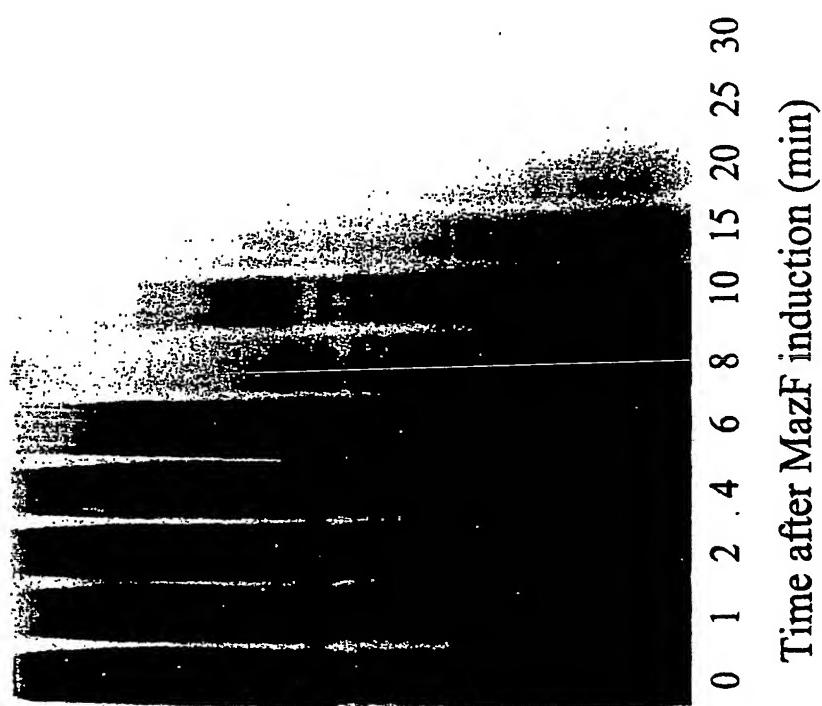


FIG. 2E

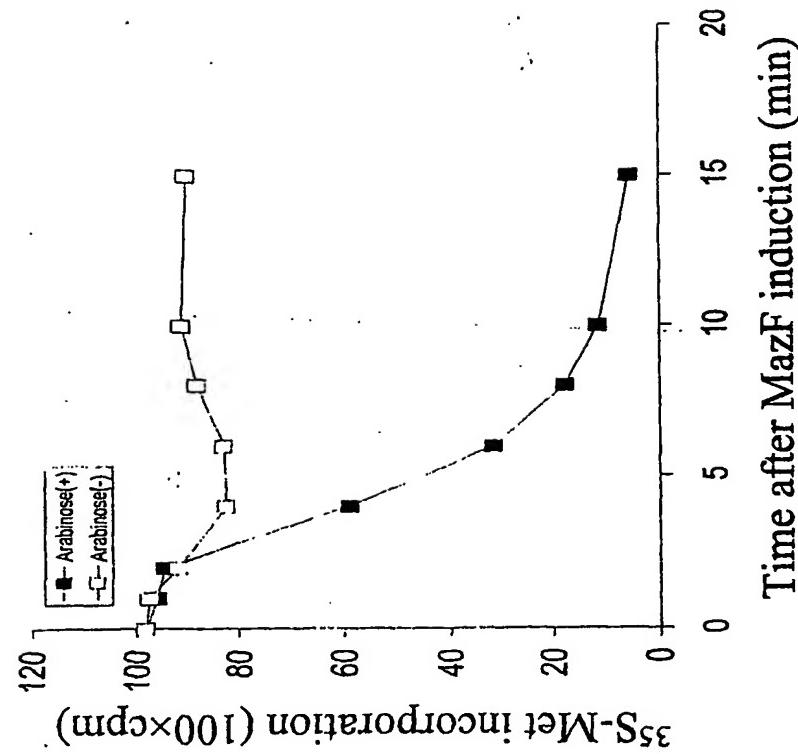


FIG. 2D

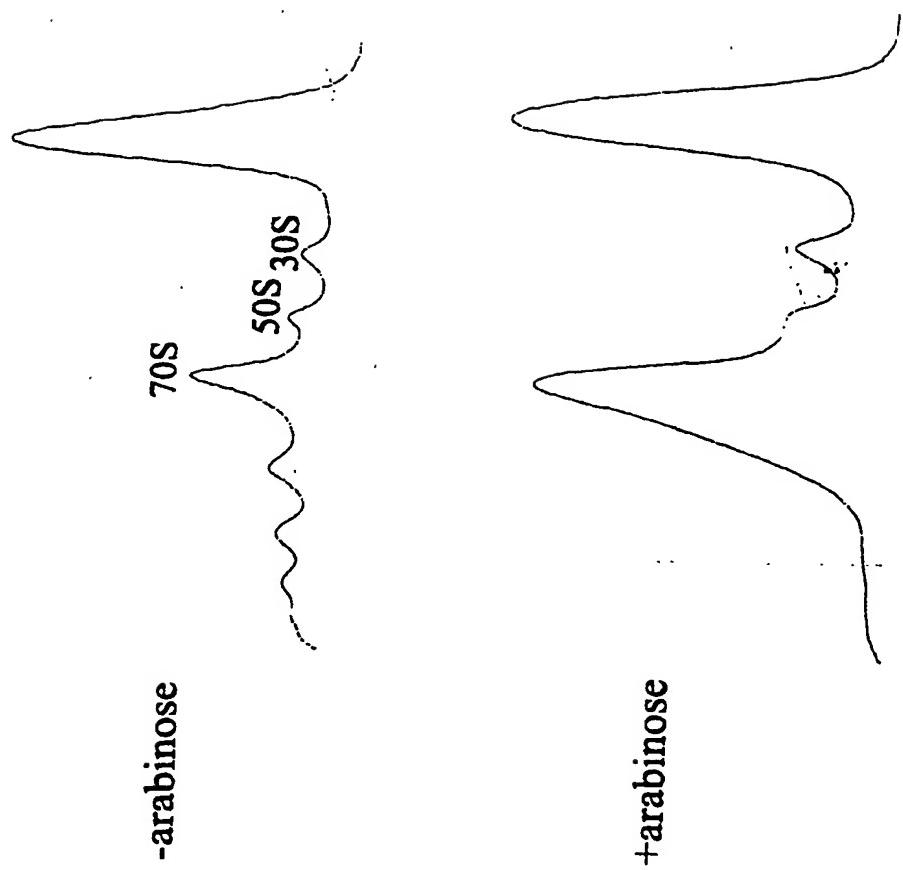


FIG. 3A

FIG. 3B

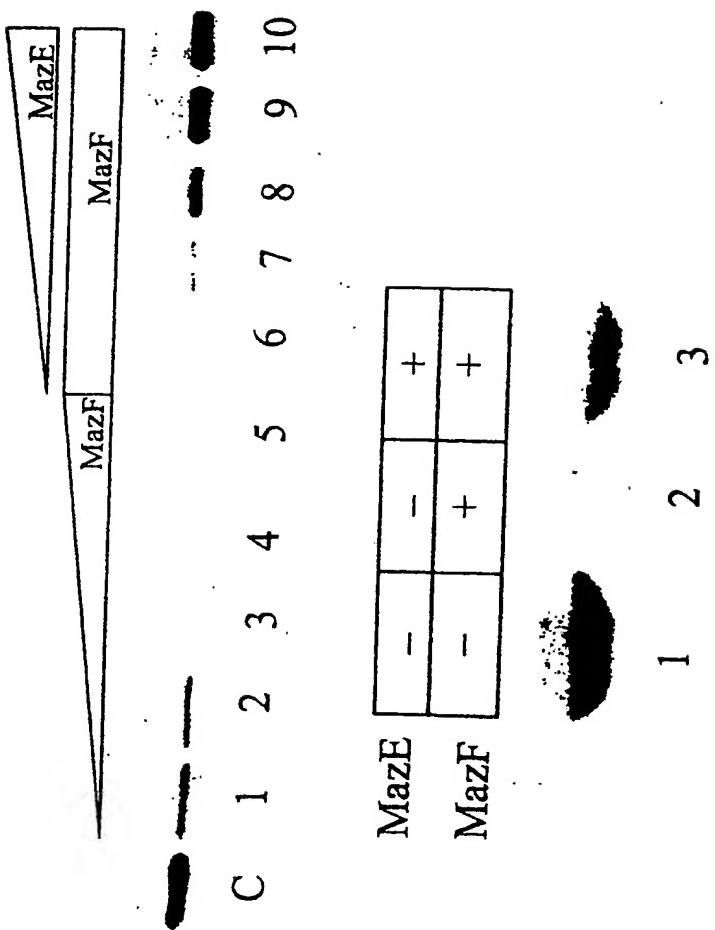
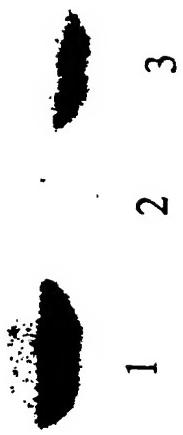


FIG. 3C



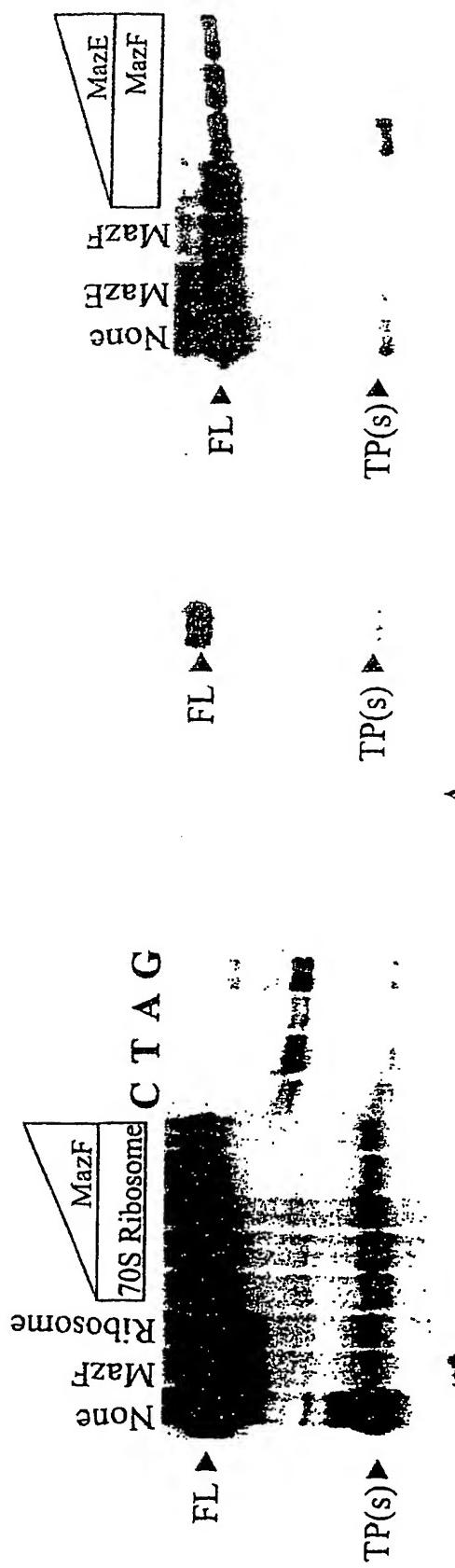


FIG. 4A

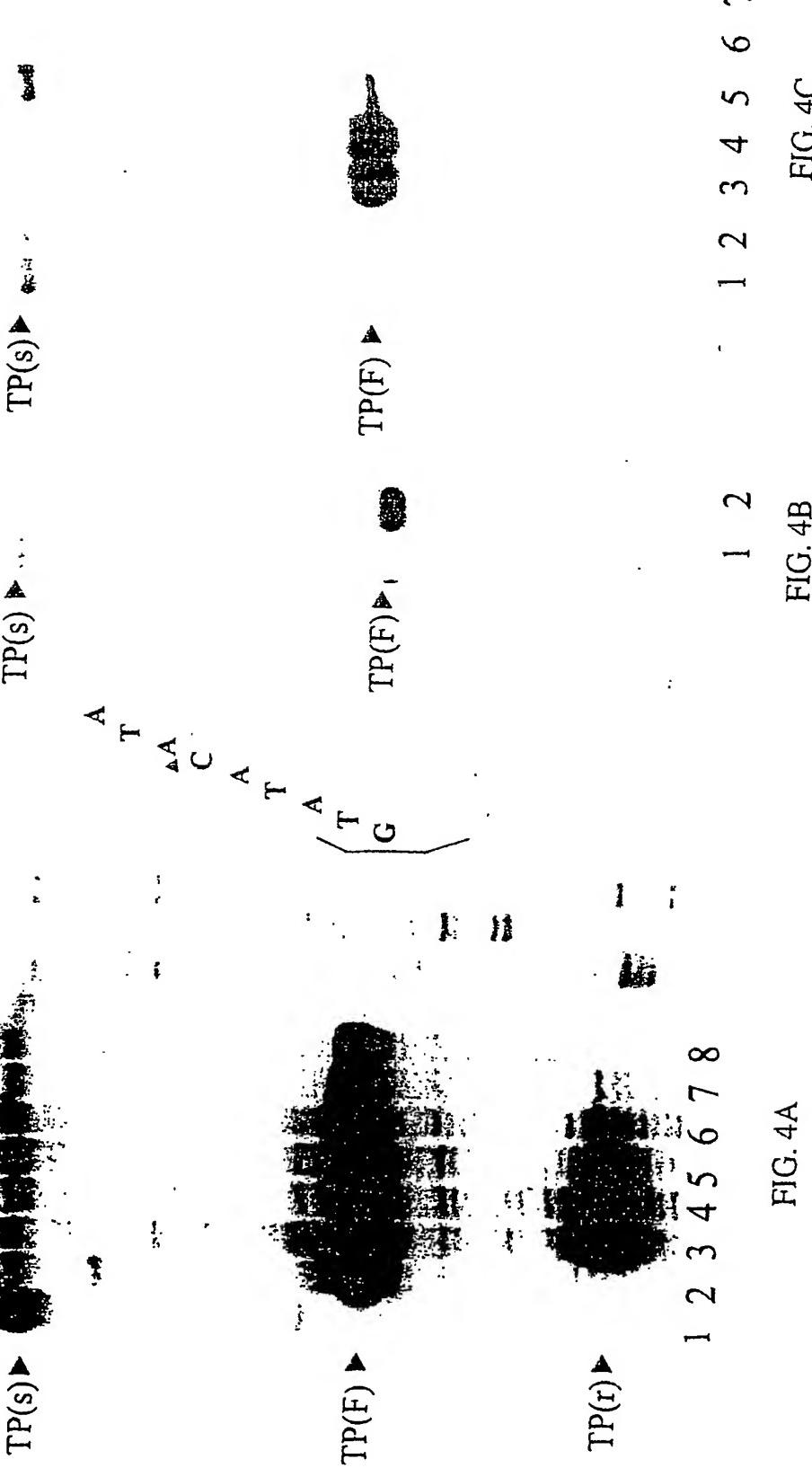


FIG. 4B

FIG. 4C

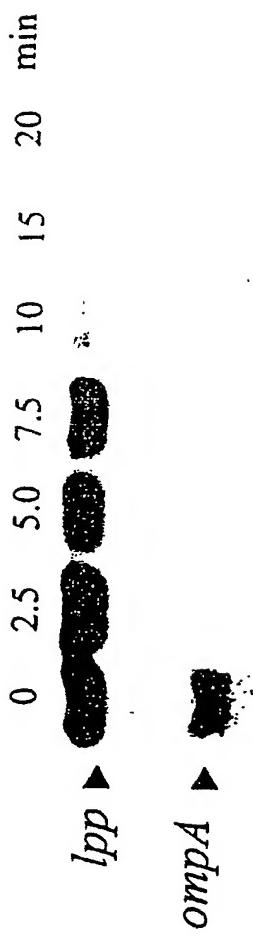
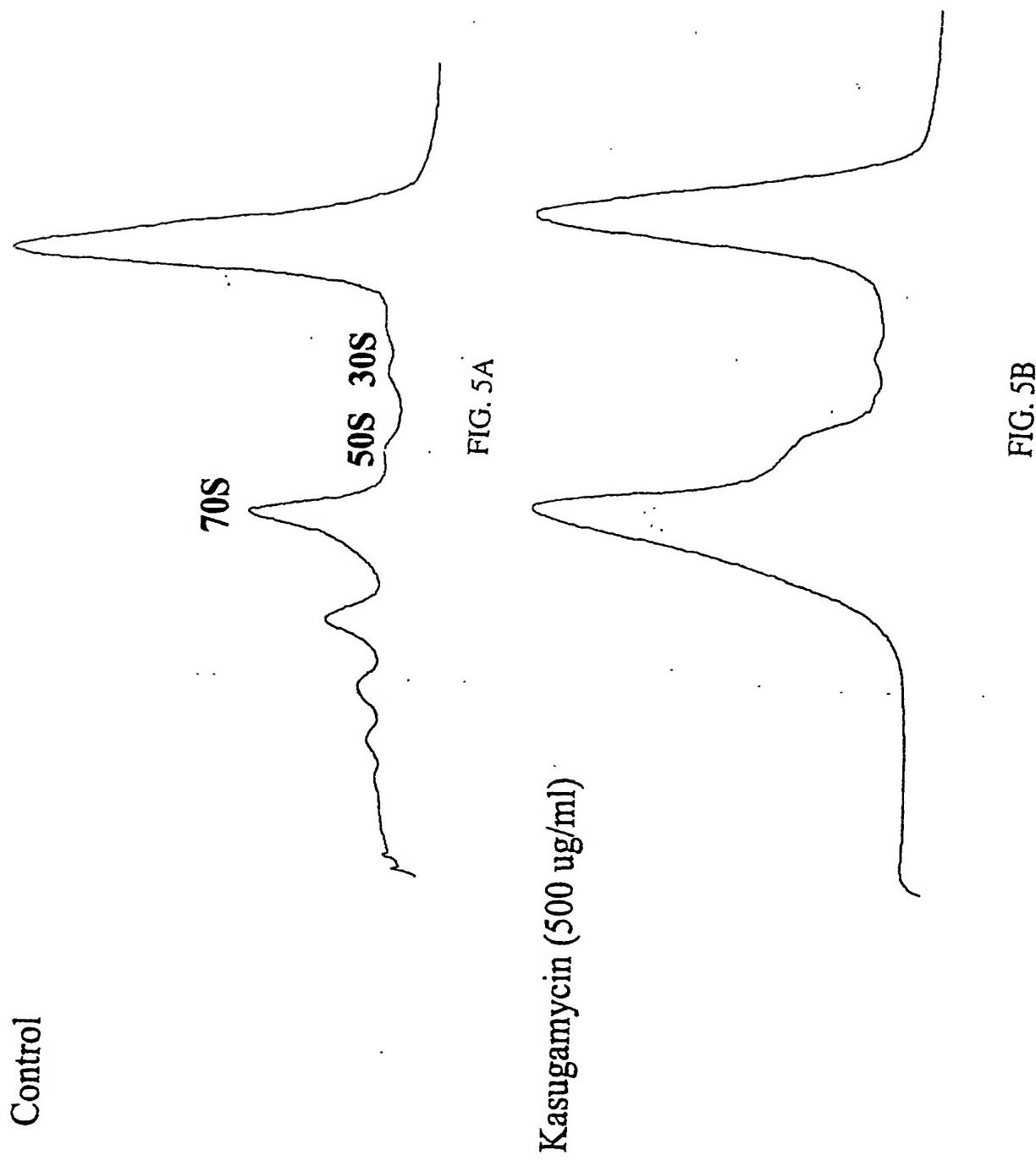


FIG. 4D



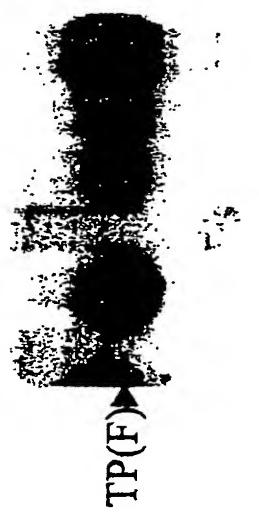
1 2 3 4 5 6



FL



TP(s)



TP(F)



TP(r)

FIG. 6

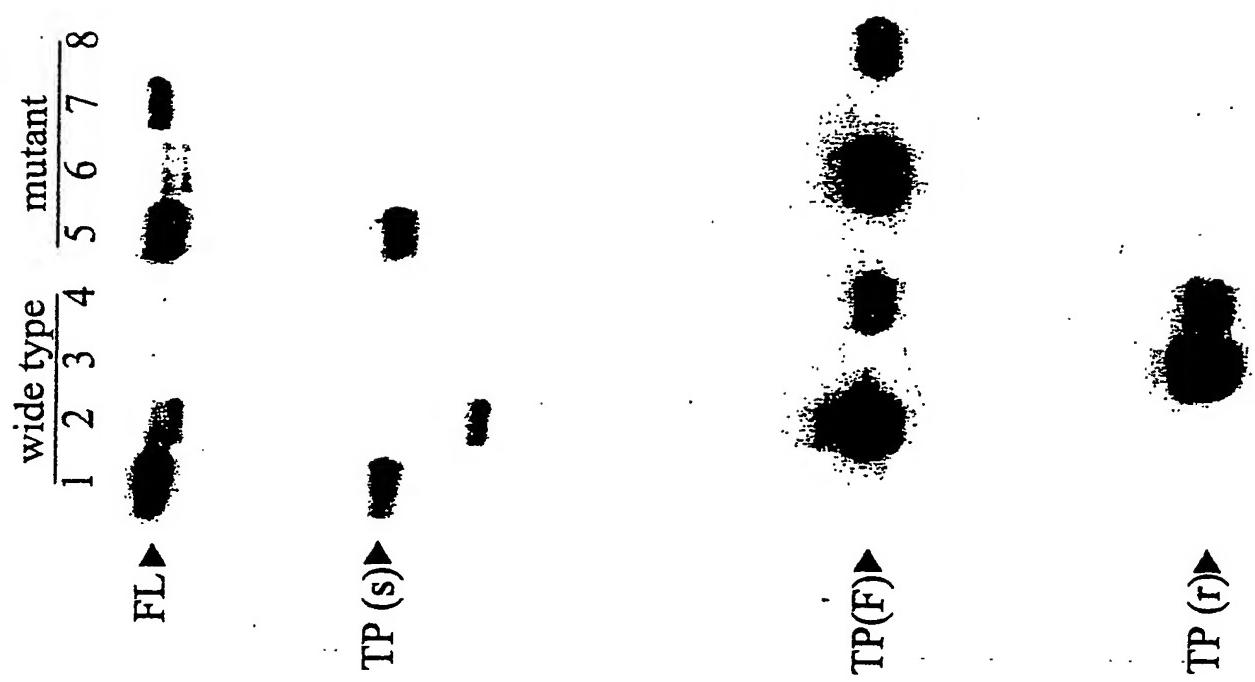


FIG. 7

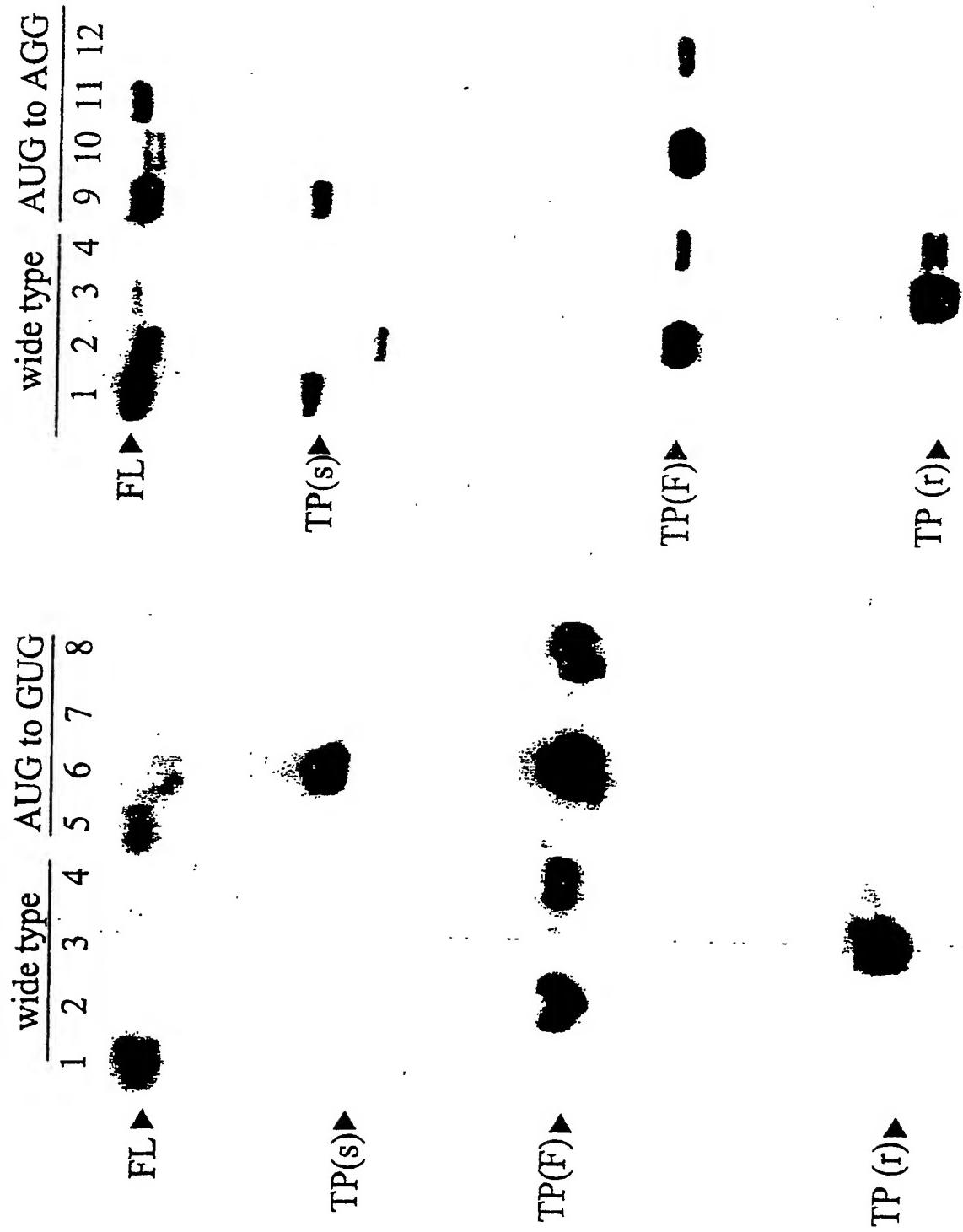


FIG. 8

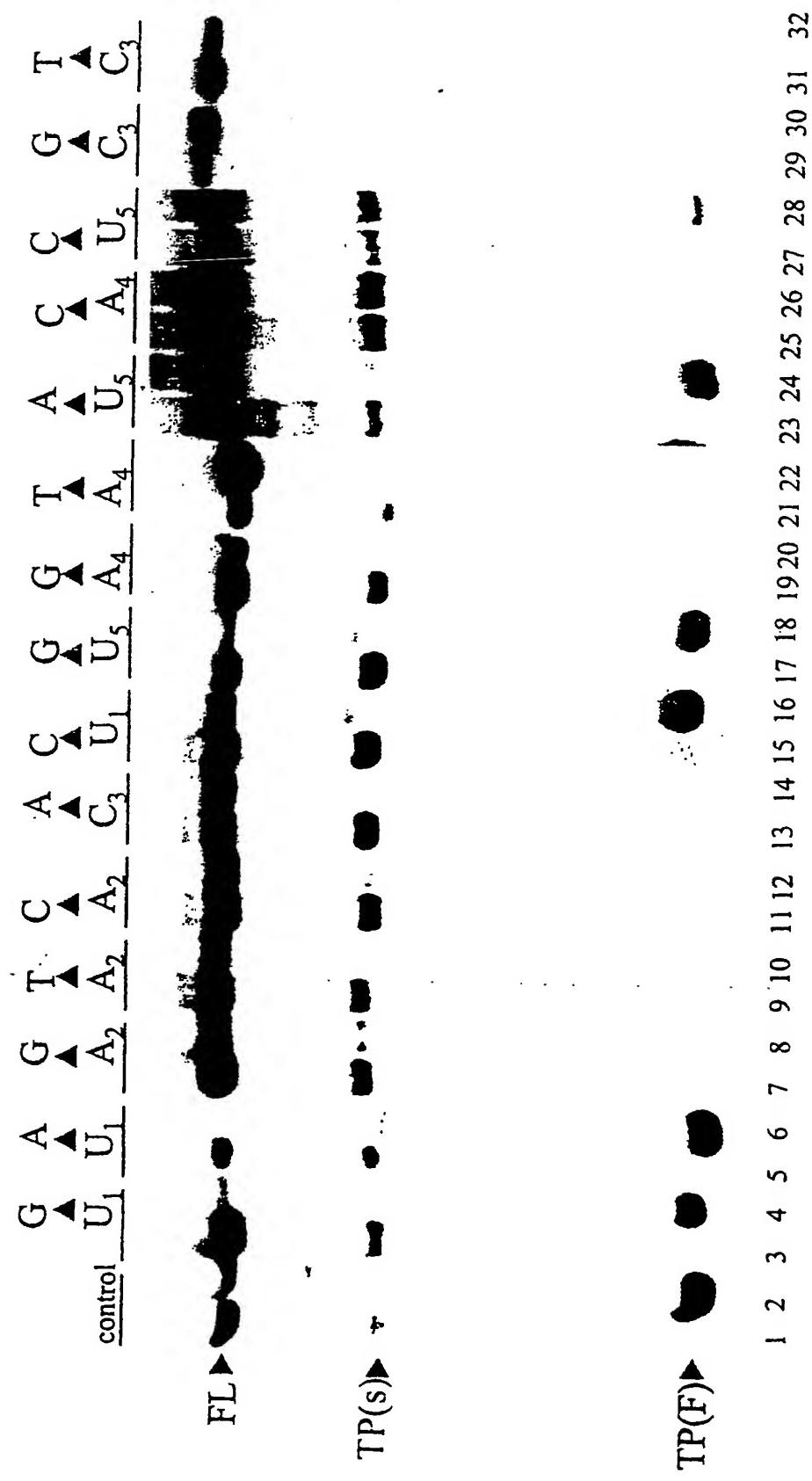


FIG. 9

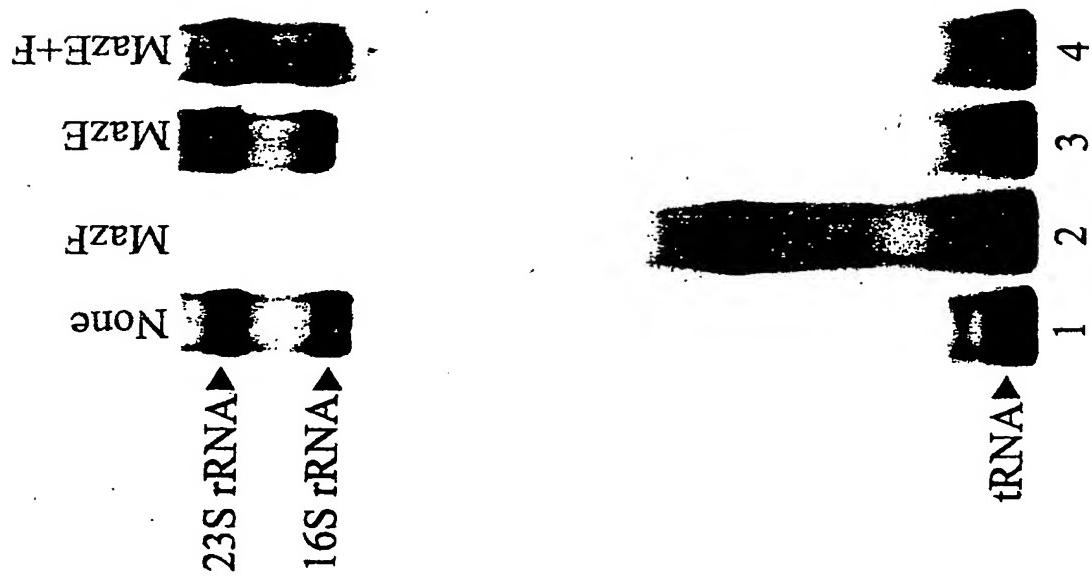


FIG. 10

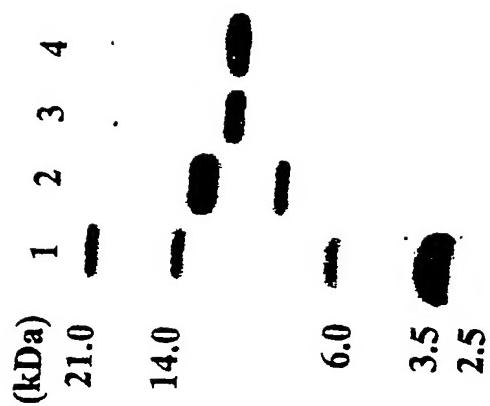


FIG. 11



FIG. 12A

FIG. 12B

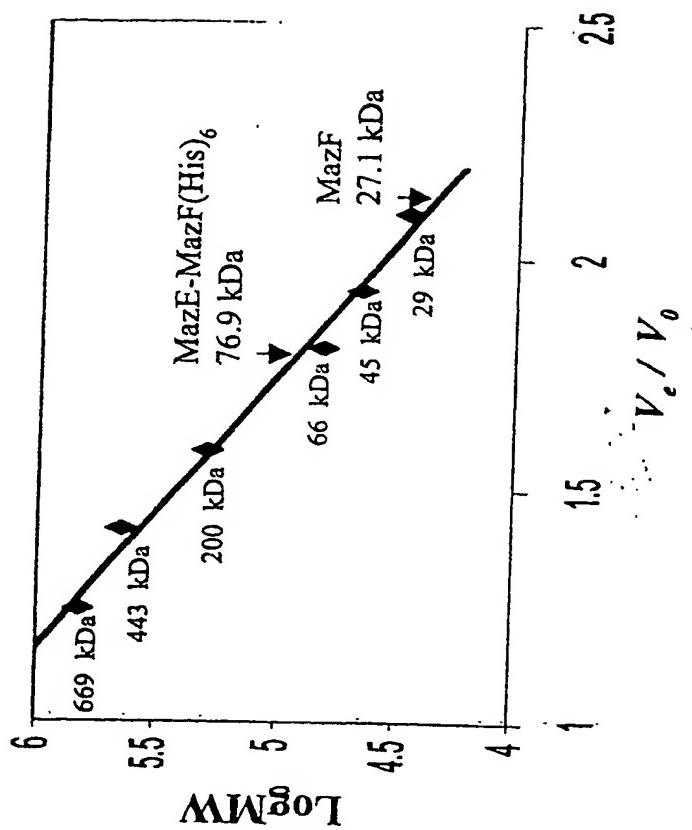


FIG. 13

1 2 3 4 5 6 7 8 9 10 11 12 1 2 3 4



1 2 3 4 5 6 7 8 9 10 11 12



FIG. 14C

Maze_D. <i>radiodurans</i>	1	-----MTSCTOKWGNSLALPIPKLAQOQGLTQSSEVELLIQS---DGQIVIR	1	-----VPA-R-Q-DIAALLAEM-P-----ENLG-E-TDWGA---SREEW-	46
Maze_B. <i>halodurans</i>	1	-----MTLMTTQOKWGNSSLAVRIFNHYAKHINTQGSETIEISLG---SDQTILK	48	-----K-K-R--KPLEELVAKIT-----ENRHE-IDFGR--T-ELL-	
PemI_R100	1	-----MHTRTRLHFVEGGVNLTVFPAJNALS-GTDNENVGMVIDNGRLIVEPYR	49	-----R-P---QYSLAE-LAQCDPNAEISAEERWLDAPA--TGQEET-	
PemI_R446b	1	-----MLYLNITMEGKMHTRLKFVEGGVNLTVFPAJNALS-GTDNENVGMVIDNGRLIVEPHR	61	-----R-P---QYSLAE-LAQCDPNAEISAEERWLDAPA--AGOEEI-	
Maze_E.coli	1	-----MIHSSVFENSHSPAVFATMCAANINIDDEVKIDLVDGKLLIEPVR	49	-----KEP---VFTLAEELVNDLITP-----ENLHENIDNGE--PKDKEW	
ChpB_E.coli	1	-----MOMRITFENGLSGACMVENIVMKELNQPGOSVEAQVSNNQIILTPIIS	50	-----P-----RYSIDELAQQCDMN---AAELSEQDVWKGSTPAGEIW	
Maze_P.putida	1	-----MOIKIQQNGKSAATIPLFAAVIKOMRIGVGSTLSIDDTGETMVKPVR	48	-----SKP---KYTHEELMAQCDLS---APEPEDMADMAMRPVGREV-	
Maze_P.profundum	1	-----AMRTQIRIGNSLGS-II-ATFIROLEL-EGAEIDWKT-DGKVIVIEPI	44	-----KMKKKRFPESRELLSGIDA-----TAHAD-IVVIVSQEL--E--	
consensus	1	m stirkrgnsslalrip allq 1 1 d ev 111	61	k p yslaellaqcdp e re dw ee i	
N-Box					
Maze_D. <i>radiodurans</i>	1	-----liv pir			
Maze_B. <i>halodurans</i>					
PemI_R100					
PemI_R446b					
Maze_E.coli					
ChpB_E.coli					
Maze_P.putida					
Maze_P.profundum					
consensus					

FIG. 15



1 2 3 4 5 6



1 2 3 4 5 6 7 8

FIG. 16A

FIG. 16B

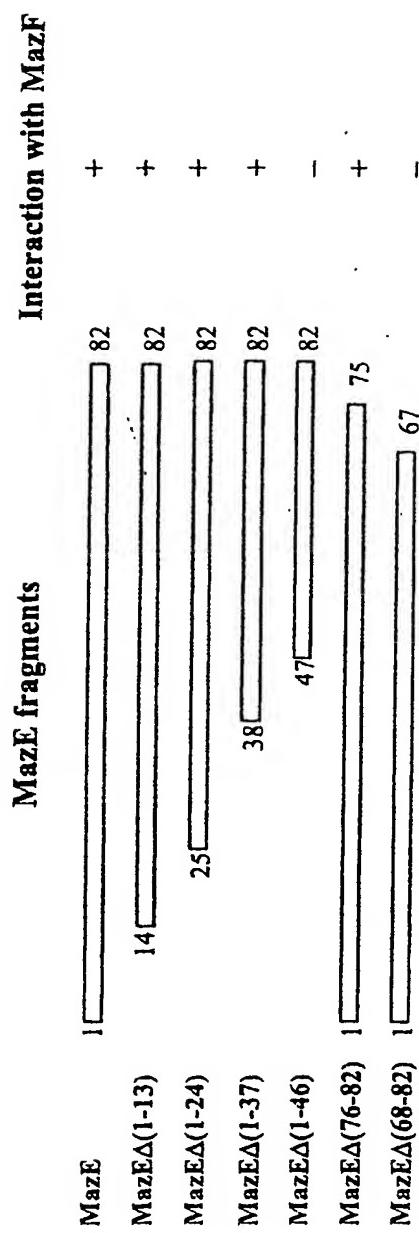


FIG. 17

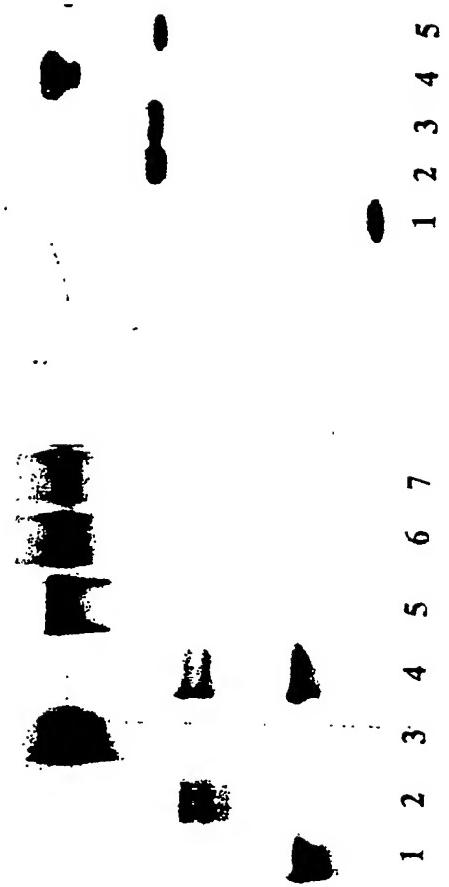


FIG. 18A

FIG. 18B



FIG. 19

FIG. 20A

Nucleic acid sequence of *Escherichia coli* *MazF* gene
(NP_289336.1)

atggta agccgatacg taccggatat gggcgatctg atttgggttg attttgcacc gacaaaagg agcgagcaag
ctggacatcg tccagctgtt gtcctgagtc ctttcatgtt caacaacaaa acaggtatgt gtctgtgtt tccttgtaca
acgcaatcaa aaggatatcc gtcgaagtt gtttatccg gtcaggaacg tgatggcgta gcgttagctg atcaggtaaa
aagtatgcc tggcgggcaa gaggagcaac gaagaaagga acagttgccc cagaggaatt acaactcatt
aaagccaaaa ttaacgtact gattgggtag

FIG. 20B

Amino acid sequence of *Escherichia coli* *MazF* protein
(NP_289336.1)

MVSRYVPDMG DLIWVDFDPT KGSEQAGHRP AVVLSPFMYN NKTGMCLCVP
CTTQSKGYPF EVVLSGQERD GVALADQVKS IAWRARGATK KGTVAPEELQ
LIKAKINVLI G

FIG. 21A

Nucleic acid sequence of *Escherichia coli* *MazE* gene

```
atgatccacagttagcgtaaagcggtggggaaattcacccggcggtgcggatcccggctacgttaatgcaggcg  
ctcaatctgaatatttgatgtgaagtgaaaggattgaccctggatggcaattaatttattgagccagtgcgt  
aaagagccgtatttacgcttgctgtcaacgacatcacgccccaaaacctccacgagaataatcgac  
tggggagagccgaaagataaggaagtctggtaa
```

FIG. 21B

Amino acid sequence of *Escherichia coli* *MazE* protein

```
MIHSSVKRWGNSPAVRIPATLMQALNLNIDDEVKIDLVDGKLIEPVRKEPVFTLAELVN  
DITPENLHENIDWGEPKDKEVW
```

FIG. 22A: Nucleic acid sequence of *Bacillus halodurans* MazF gene (SEQ ID NO: 39)

```

atgccagtagc cgatcgagg gaatcttgg tttgttagact ttaaccaca atcgggtcat
gaccaagccg ggacacgacc ggctattgtt ttgtccccata aattatcaa taaaaacaca
ggttttgcgg tggttgtcc aattaccaga caacaaaaag gttatcctt taaaatagaa
ataccaccgg gtttacctat tgaagggtt attcttactg accaagtaaa aagtctggat
tggagagcaa gaaactttca cattaaagga caagcaccag aggaaactgt tactgattgt
ttacaactta ttcatacatattttatcttaa

```

FIG. 22B: Nucleic acid sequence of *Staphylococcus epidermidis* MazF gene (SEQ ID NO: 40)

```

atgattagaag aggatgtt tatttagcgg atttattcacc agttcaaggg tctgaacaag
ggggagtaag acctgtgtt atcattcaaa atgataactgg taataaatat agtccaactg
taattttagc tgcgattact gatgggatta ataaagcgaa aataccaaacc cacgtagaaa
ttgaaaagaa aaagtataaa ttagacaaag attcagttt tcttcttga caaatttagaa
cactagataa aaagcgttt aaagaaaaat taacattttt atcagagagt aaaatgatag
aggttataa tgcccttagat attagttgg gattaaataa ctgtatcat cataatcttaa

```

FIG. 22C: Nucleic acid sequence of *Staphylococcus aureus* MazF gene (SEQ ID NO: 41)

```

atgattagac gaggagatgt ttatttagca gatttacac cagtacaggg atctgaacaa
gggggagtca gacctgttagt catabttca aatgataactg gtaataataa tagtcctaca
gttatttttg cgcaataac tggtagattt aataaagcgaa aaataaccgac acatgttagag
attgaaaaga aaaagtataaa gttggataaa gactcagttt tatttttaga acaaatttgt
acacttgata aaaaacgatt gaaagaaaaa ctgacgtact tatccatgtg taaaatgaaa
gaagtagata atgcactaat gattagttt gggctgtatc cagtagctca accagaaaaaa
ttaggcgtctt attatatgtt ttttcagag ataaataaaa tattgtataaa

```

FIG. 22D: Nucleic acid sequence of *Bacillus subtilis* MazF gene (SEQ ID NO: 42)

```

ttgatttgaa acgcggcgat gtttatttttgc ctgatttatac tcctgtgtt ggctcagagc
aaggcgggtt gcccgggtt ttagtgcattt aaaatgcacat cggaaatcgc ttcagcccaa
ctgttatgtt tgcagccata acagcacaaa tacagaaagc gaaattacca acccacgtcg
aaatcgatgc aaaacgctac gttttgaaa gagattccgt tattttgtt gagcaaattc
ggacgattga caagcaaaagg ttaacggata agattactca tctggatgtt gaaatgtatgg
ataagggttga tgaaggccta caaatcagtt tggcactcat tgatttttag

```

FIG. 22E: Nucleic acid sequence of *Neisseria meningitidis* MC58 MazF gene (SEQ ID NO: 43)

```

atggat atggtagtac gcggcgaaat ctatctggc tccttagacc cgaccgtagg aagcgaaatc
aaaaagacac gtccttgcgtt cgtatctct cctccgtaaa tacacaacta tctcaagact
gtgctgatcg ttcccatgac gagcggaaagc cgtccctgccc cggtccgcgt caatgtccgc
tttcaggata aagacggttt gctttgccc gaacagattt gggctgtgga taaagccgga
ttggtcaaac atcttggcaa ttagacaac agtacggctg aaaaactgtt tgcagtattt
caggagatgt ttgcctga

```

FIG. 22F: Nucleic acid sequence of *Morganella morgani* MazF gene (SEQ ID NO: 44)

```
atgcgccccg cggctggtca ggaggaaatc tgacatggaa agagggaaa tctggcttgt  
ctcgcttgac cctaccgcag gtcatgagca gcagggaaacg cggccggta c tgattgtcac  
gcccggctgct tttaaccgcg tgaccggcct gcctgttgtt gtgcccgtga ccagcggagg  
taattttgcc cgcacagcag gctttgctgt gtcgcttgac ggcgcggca tacgtaccac  
cggcggttg cggtgcgatc aaccccgac gatcgatatg aaagcccgcg gccggcaaacg  
actcgaacgg gtgccagaga ctatcatgga cgacgttctt ggccgtctgg ccaccatcct  
gacctga
```

FIG. 22G: Nucleic acid sequence of *Mycobacterium tuberculosis* MazF gene (SEQ ID NO: 45)

```
gtggtgattc ggggagcggt ctacagggtc gacttcggcg atgcgaagcg aggccacgag  
caacgcgggc ggcgctacgc cgtggtcattc agccccggct cgatgccgtg gagtgttagta  
accgtggtgcc cgacgtcgac aagcgcacaa cctgcgggtt tccgaccaga gctggaaatgc  
atgggaaccaa agacacgggtt cctgggtggat cagatccgga cgatcggcat cgtctatgtg  
cacggcgatc cggtcgacta tctggaccgt gaccaaattgg ccaagggtgga acacgcgtg  
gcacgatacc ttggctgtga
```

FIG. 22H: Nucleic acid sequence of *Bacillus anthracis* MazF gene (SEQ ID NO: 79)

```
tt gattgtaaaa cgcggcgacg tgtattttgc agacctttcc ccagttgttg  
gttctgagca aggaggtgtt cgtccggttc ttgtcattca aaatgacatc gaaaatcgtt  
ttagtccaaac ggtgattgtt gccgcatttca ctgcacagat tcaaaaagcg aaatttaccca  
ctcatgtgga aattgtatgcg aaaaagtacg gtttgagag agattctgtt attttacttg  
agcagattcg aacaatcgat aagcagcgct taacggacaa aatcactcac ttagatgaag  
ttagatgat tcgtgttagat gaagcgctac aaatttagttt aggactaata gattttaa
```

FIG. 23A: Amino acid sequence of *Bacillus halodurans* MazF (NP_244588.1) (SEQ ID NO: 46)

MPVPDRGNLV YVDFNPQSGH DQAGTRPAIV LSPKLFNKNT GFAVVCPITR QQKGYPFEIE
IPPGLPIEGV ILTDQVKSLD WRARNFHIKG QAPEETVTDC LQLIHTFLS

FIG. 23B: Amino acid sequence of *Staphylococcus epidermidis* MazF (AAG23809.1) (SEQ ID NO: 47)

MIRRGDVYLA DLSPVQGSEQ GGVRPVVIIQ NDTGNKYSPT VIVAAITDGI NKAKIPTHVE
IEKKKYKLDK DSVILLEQIR TLDKKRLKEK LTFLSESKMI EVDNALDISL GLNNFDHHKS

FIG. 23C: Amino acid sequence of *Staphylococcus aureus* MazF (NP_372592.1) (SEQ ID NO: 48)

MIRRGDVYLA DLSPVQGSEQ GGVRPVVIIQ NDTGNKYSPT VIVAAITGRI NKAKIPTHVE
IEKKKYKLDK DSVILLEQIR TLDKKRLKEK LTYLSDDKMK EVDNALMISL GLNAVAQPEK
LGVYYMYFSE INKILI

FIG. 23D: Amino acid sequence of *Bacillus subtilis* (1NE8_A) MazF (SEQ ID NO: 49)

MIVKRGDVYF ADLSPVVGSE QGGVRPVVLVI QNDIGNRFSP TAIVAAITAQ IQKAKLPTHV
EIDAKRYGF E RDSVILLEQI RTIDKQRLTD KITHLDDDEMM DVKDEALQIS LALIDF

FIG. 23E: Amino acid sequence of *Neisseria meningitidis* MC58 MazF (NP_266040.1) (SEQ ID NO: 50)

MYIPDKGDIF HLNFDPSSGK EIKGGRFALA LSPKAFNRAT GLVFACPISQ GNAAAARSSG
MISTLLGAGT ETQGNVHCHQ LKSLDWQIRK ASFKETVPDY VLDDVLRIG AVLFD

FIG. 23F: Amino acid sequence of *Morganella morgani* MazF (AAC82516.1) (SEQ ID NO: 51)

MRRRLVRRKS DMERGEIWLW SLDPTAGHEQ QGTRPVLIYT PAAFNVRTRL PVVVPVTSGG
NFARTAGFAV SLDGAGIRTT GVRCDQPRT IDMKGKGR LERVPETIMD DVLGRLATILT

FIG. 23G: Amino acid sequence of *Mycobacterium tuberculosis* MazF (NP_217317.1) (SEQ ID NO: 52)

MMRRGEIWQV DLDPARGESEA NNQRPAVVVS NDRANATATR LGRGVITVVP VTSNIAKVYP
FQVLLSATTT GLQVDCKAQEQIERSIATER LLRPIGRVSA AELAQLDEAL KLHSDLWS

FIG. 23H: Amino acid sequence of *Bacillus anthracis* MazF
(NP 842807) (SEQ ID NO: 80)

MIVKRGDVYF ADLSPVVGSE QGGVRPVLVI QNDIGNRFSP TVIVAAITAQ IQKAKLPTHV
EIDAKKYGFE RDSVILLEQI RTIDKQRLLTD KITHLDEVMM IRVDEALQIS LGLIDF

FIG. 24A: Nucleic acid sequence of *Deinococcus radiodurans* mazE gene (SEQ ID NO: 53)

atgacgagtc aaattcagaatggggcaacagcctcgctccgcattccaaagctctggcgagcaggta
ggactgacgcagagttcagaagtggagctgttcttcaggacggtcagattgtcatccggccagttctgt
ccgcagtagatctgcgcgctgtggccaaatgacacctgaaaatctgcatgggaaacagactgggc
qactgqaaggacqcgaggatggtaa

FIG. 24B: Nucleic acid sequence of *Bacillus halodurans* *mazE* gene (SEQ ID NO: 54)

gtgacactcatgactactataaaaaatggggaaataggtagtttagctgtcgtattccgaaccattatgctaaa
catattaacgttacgcaaggatctgaaaattgaactaagcttagggagtgatcaaacgattatttaaagcct
aaaaaaaaaaaaagaaagccaacattagaggaatttagtggcaaaaatcactcctgaaaacagacataacgaaattgat
ttcgggagaacacgqaaaggaatttgtttaaa

FIG. 24C: Nucleic acid sequence of Plasmid R100 *pemI* gene (SEQ ID NO: 55)

atgcataccacccgactgaagagggtggcgctcagttatgctgaccgtcccacccggcactgctgaatgcg
ctgtctctggcacagataatgaagtggcatggtcattgataatggccggctgatttgttagccgtacaga
cgcccccaatattactggctgagctactggcacagtgtatccgaatgctgaaatatcagctgaagaacga
aatggctggatgaccggcactggtcaggaggaaatctga

FIG. 24D: Nucleic acid sequence of Plasmid R466b *pemI* gene (SEQ ID NO: 56)

atgttatatatataactttatggaggaaaaatgcataccactcgactgaagaagggtggcggctca
gtcatgtgaccgtcccacccggcactgctgaatgcgcgtcgctgggtacagataatgaagtggcatggtc
attgataatggccggctgatttgagccgcacagacgcggcagttactggctgagctgtggcacag
tgcatccgaacgctaaatctcggcagaagaacgtgaatggctggatgcgcggctggtcaggaggaa
atctga

FIG. 24E: Nucleic acid sequence of *Escherichia coli* *chps* gene (SEQ ID NO: 57)

gtgcagatcgattaccataaaaagatggggaaacagtgcaggtatggcattccaaatatcgtaatgaaa
gaacttaacttacagccggggcagagcgtggaaatgcaggtgagcaacaaccactgattctgacaccatc
tccaggcgctactcgcttgcataactgcgtggcacagtgtgacatgaacgcgcggaaacttagcgagcaggat
gtctgggttaatccaccctgcgggtgacgaaatatggtaa

FIG. 24F: Nucleic acid sequence of *Pseudomonas putida* KT2440 *mazE* gene (SEQ ID NO: 58)

atgcagatcaagattcaaacagtggggcaacagcgcgcgatccgttcccccccgactactcaagcagatgcgcctcggtgtcggtccaccctgagccttgacacaacgggtgagacgatgggtctaaaccctgcaggctcgaaacccaagtagtacacccttgaggaactgtatggcccagtgtgacctgagtgacccggagccagaggacatggccgactggaatqccatqcccatqccatqggggcgtqaagtgtga

FIG. 24G: Nucleic acid sequence of *Photobacterium profundum* mazE gene (SEO ID NO: 59)

gtgcaatgagaactcagataaagaagatcggttaactcacttggttcaattattcctgccactttattcgtc
agcttgaactggcagaggcgccagaaattgtgttaaaacgggtgatggaaaaattgtgatttgatggccaatta
aaaaaatgaaaaaaacgttccattcagtgagcgtgaattactaagtggattggatgcacacactgctcatg
ctqacqaactqgtttaatttctacccagggctaggcataataa

FIG. 25A: Amino acid sequence of *Deinococcus radiodurans* MazE (GenBank Accession No. NP_294139) (SEQ ID NO: 60)

MTSQIQKWGN SLALRIPKAL AQQVGLTQSS EVELLLQDGQ IVIRPVPARQ YDLAALLAEM
TPENLHGETD WGALEGREEW

FIG. 25B: Amino acid sequence of *Bacillus halodurans* MazE (GenBank Accession No. NP_244587) (SEQ ID NO: 61)

MTLMTTIQQW GNSLAVRIPN HYAKHINVTQ GSEIELSLGS DQTIIILPKKK RKPTLEELVA
KITPENRHNE IDFGRTGKEL L

FIG. 25C: Amino acid sequence of PemI plasmid R100 (GenBank Accession No. NP_052993) (SEQ ID NO: 62)

MHTTRLKRVG GSVMLTVPPA LLNALSLGTD NEVGMVIDNG RLIVEPYRRP QYSLAELLAQ
CDPNAEISAE EREWLDAPAT QEETI

FIG. 25D: Amino acid sequence of PemI plasmid R466b (GenBank Accession No. AAC82515) (SEQ ID NO: 63)

MLYLNITFME GKMHTTRLKK VGGSVMLTVP PALLNALSLG TDNEVGMVID NGRLIVEPHR
RPQYSLAELL AQCDPNAEIS AEEREWLDAP AAGQEETI

FIG. 25E: Amino acid sequence of *Escherichia coli* ChpS (GenBank Accession No. NP_290856) (SEQ ID NO: 64)

MQMRITIKRW GNSAGMVIPN IVMKELNLQP GQSVEAQVSN NQLILTPISR RYSLDELLAQ
CDMNAEELSE QDVWGKSTPA GDEIW

FIG. 25F: Amino acid sequence of *Pseudomonas putida* MazE KT2440 (GenBank Accession No. NP_742931) (SEQ ID NO: 65)

MQIKIQQWGN SAAIRLPAAV LKQMRLGVGS TLSLDTTGET MVLKPVRSKP KYTLEELMAQ
CDLSAPEPED MADWNAMRPV GREV

FIG. 25G: Amino acid sequence of *Photobacterium profundum* MazE (GenBank Accession No. AAG34554) (SEQ ID NO: 66)

AMRTQIRKIG NSLGSIIIPAT FIRQLELAEG AEIDVKTVDG KIVIEPIRKW KKRFPFSERE
LLSGLDAHTA HADELVVIST QELGE

FIG. 26A

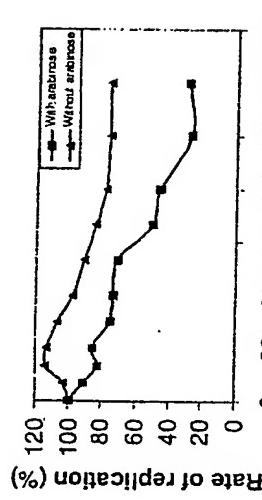


FIG. 26B

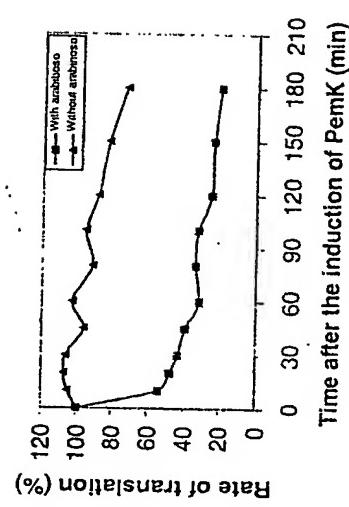


FIG. 26C

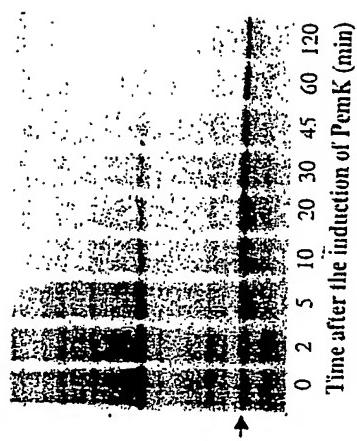


FIG. 27A

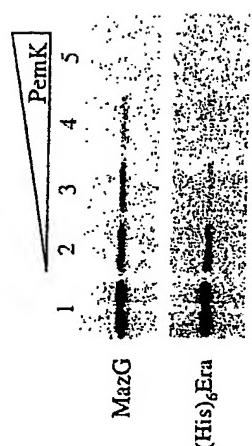


FIG. 27B

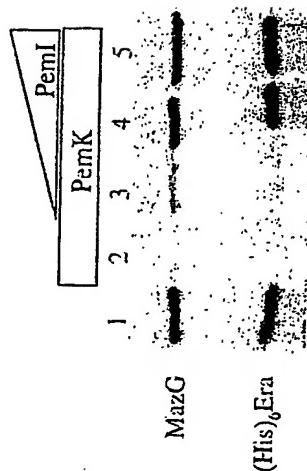


FIG. 27C



FIG. 28A

FIG. 28B

FIG. 28C

FIG. 28D

FIG. 28E

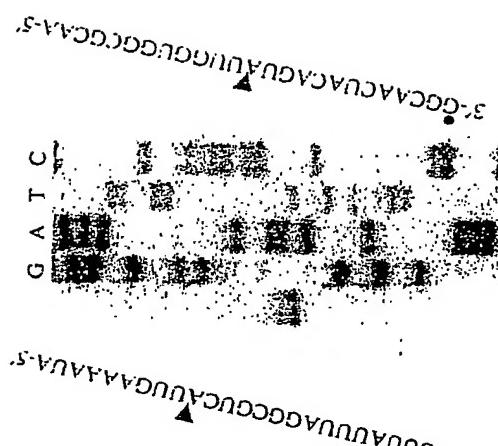
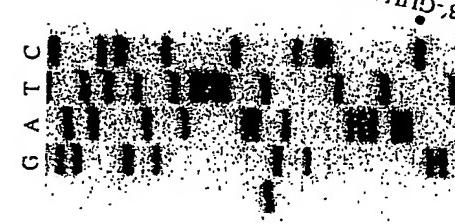
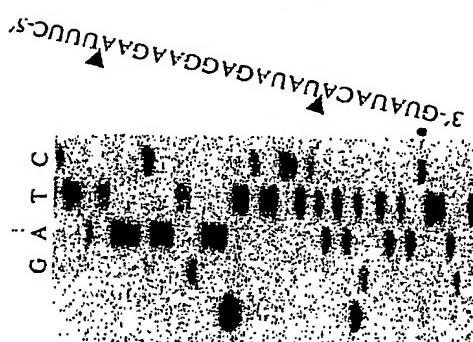


FIG. 29A

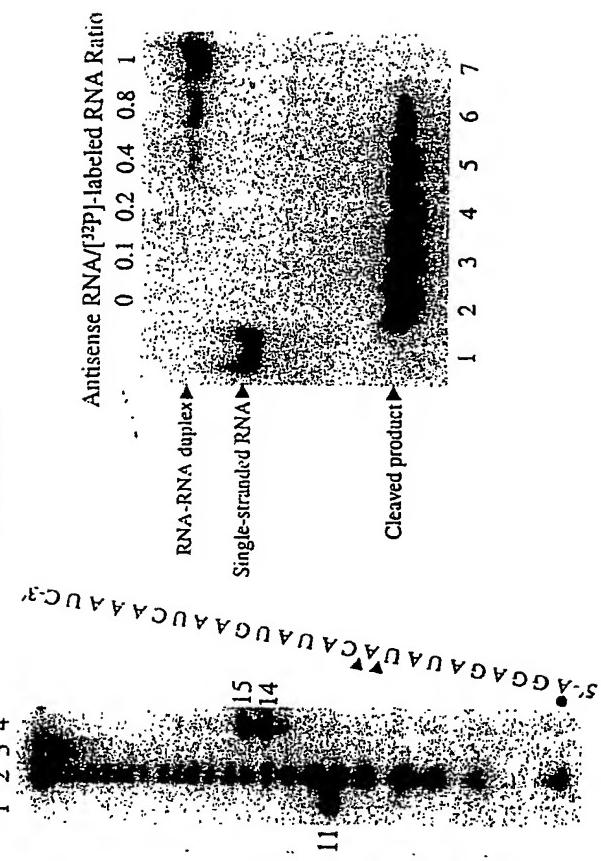


FIG. 30A

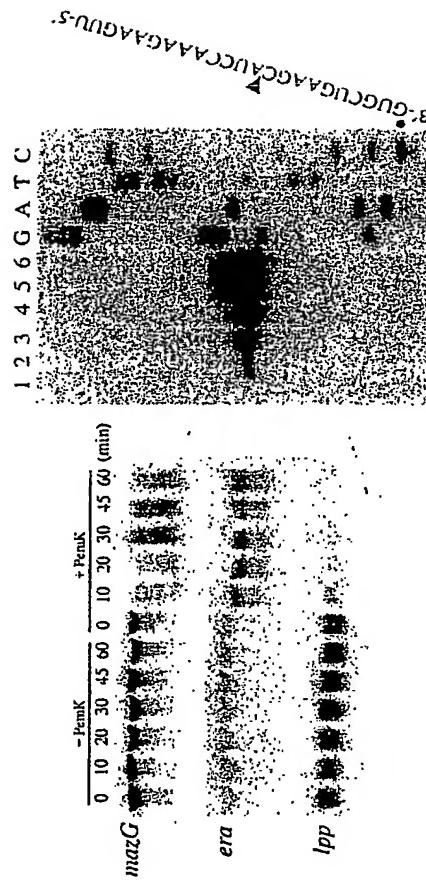
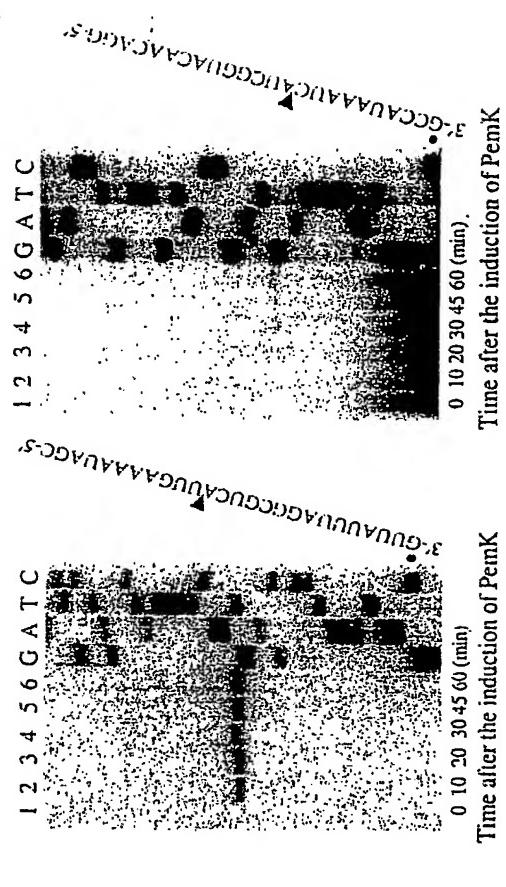


FIG. 30C



atggaaagag gggaaatctg gcttgtctcg cttgatccta
ccgcaggta tgagcagcag ggaacgcggc cggtgctgat
tgtcacaccg gcggccttta atcgcgtgac ccgcctgcct
gttgttgtgc ccgtaaccag cggaggcaat tttgcccgc
ctgccggctt tgcgggttcg ttggatggtg ttggcatacg
taccacaggt gttgtacgtt gcgatcaacc ccggacaatt
gatatgaaag cacggggcgg aaaacgactc gaacgggttc
cgagactat catgaacgaa gttcttggcc gcctgtccac
tattctgact tga

FIG. 31A

MERGEIWLS LDPTAGHEQ QGTRPVLIYT PAAFNRVTRL
PVVVPVTSGG NFARTAGFAV SLDGVGIRTT GVVRCDQPRT
IDMKARGGKR LERVPETIMN EVLGRLSTILT

FIG. 31B

atgcatacca cccgactgaa gagggttggc ggctcagtt
tgctgaccgt cccaccggca ctgctgaatg cgctgtctct
gggcacagat aatgaagttg gcatggtcat tgataatggc
cggctgattg ttgagccgta cagacgccccg caatattcac
tggctgagct actggcacag tgtgatccga atgctgaaaat
atcagctgaa gaacgagaat ggctggatgc accggcgact
ggtcaggagg aaatctga

FIG. 32A

MHTTRLKRVG GSVMLTVPPA LLNALSLGTD NEVGMVIDNG
RLIVEPYRRP GYSLAELLAQ CDPNAEISAE EREWLDAPAT
QEELI

FIG. 32B

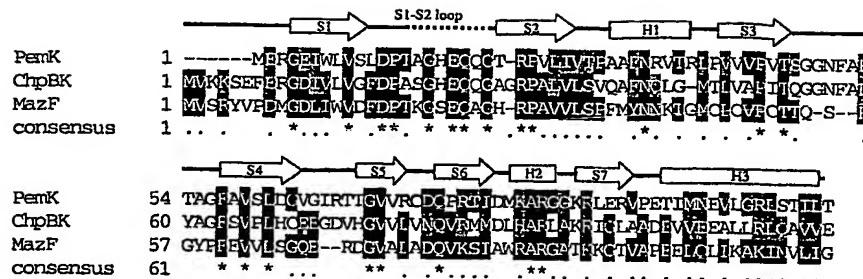


FIG. 33

PemKR100_E.coli	1	-----MERGEIWVSLDP TAGHEQQG-TRFVLAVTPA AFN RVTRD PVVAPVTS GGNF ARTAGFAVSLDG VGI RT---TG
PemK_M.celatum	1	----MTERGDIVIVSLDP TS GHEQSG-TRFVLVSPGAENRUTKTEWVPI TRGGNF ARTAGFAVSLTDAGTRT---AG
PemK_P.putida	1	-MKRLKFARGDIVRVNLDPPTVGRÉQQGSGRPALVLT PAAFN-ASCLAVIIPITOGCDFARHAGFAVTL SGAGTQT---QG
ChpBK_E.coli	1	MVKRSEFERGDIVDVGFDPASGHEQQGAGRPALVLSVOAFN-QLGHTIVAPI TO QGNF ARHAGFSVPLHCEEGDV---HG
PemK_S.flexneri	1	MVKARTPHRG EIWYFNEPD PVAGHELOG- FHYCIVVVT DKKLNNWLKVAMCCPISTGANAARS TCVTVNVLP RD TQ TGNLHG
MazF_E.coli	1	MVSR YVPD MGDEIWVDFDPTKGSEOAG-HRPAWVLSPFM YNNK TGMCLCVPCTTQ-----SKGY PFEVVL SGQER---DG
PemKR100_E.coli	71	VVRCDQPRRIIDMKARGGKR IERVPETIMNEV LGRLS TILT--
PemK_M.celatum	72	VIRCDQPRSIDI RARKGRKVERVPSCV IDEALAKLATILT--
PemK_P.putida	76	VILCNQVRPVDI DEARFAKR IESVPEAVI D DALARVQTLED--
ChpBK_E.coli	77	VVLVNQVRMM DLHARLAKRIGLAAD E VVE ALLRLQAVW E--
PemK_S.flexneri	80	VVLCHQ LKAVD L IARGAKFHTVADEKLI SEV I SKLVNLD PQ
MazF_E.coli	72	VALADQVKSIAW HARGATIK KGTVAPEE LQLIKAKINV LIG--

FIG. 34

Human Eotaxin Sequence

G	P	A	S	V	P	T	T	C	C	F	N	L	A	
AUG GGU CCA GCA UCU GUU CCG ACU ACC UGU UGC UUU AAC CUG GCG														
N	R	K	I	P	L	Q	R	L	E	S	Y	R	I	
AAC CGC AAA AUU CCG CUG CAG CGC CUG GAA AGC UAU CGC CGU AUU														
T	S	G	K	C	P	Q	K	A	V	I	F	K	T	K
ACC UCU GGC AAA UGC CCC CAG AAA GCG GUG AUC UUU AAA ACC AAA														
L	A	K	D	I	C	A	D	P	K	K	W	V	Q	
CUG GCG AAA GAU AUU UGC GCG GAU CCG AAA AAA UGG GUG CAG														
D	S	M	K	Y	L	D	Q	K	S	P	T	P	K	P
GAU UCU AUG AAA UAU CUG GAU CAG AAA UCU CCG ACC CCG AAA CCG														
UAA														

FIG. 35

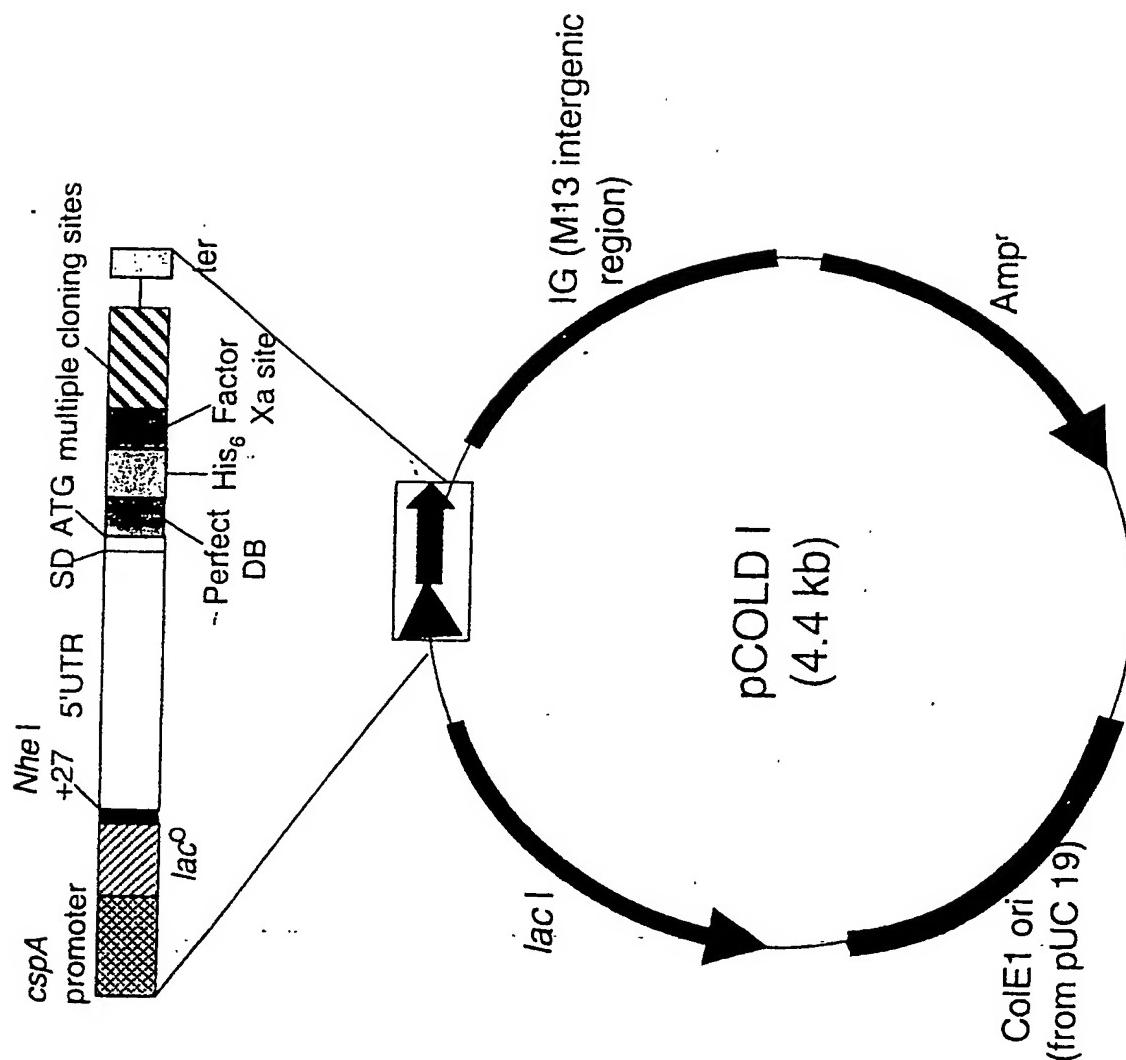


FIG. 36

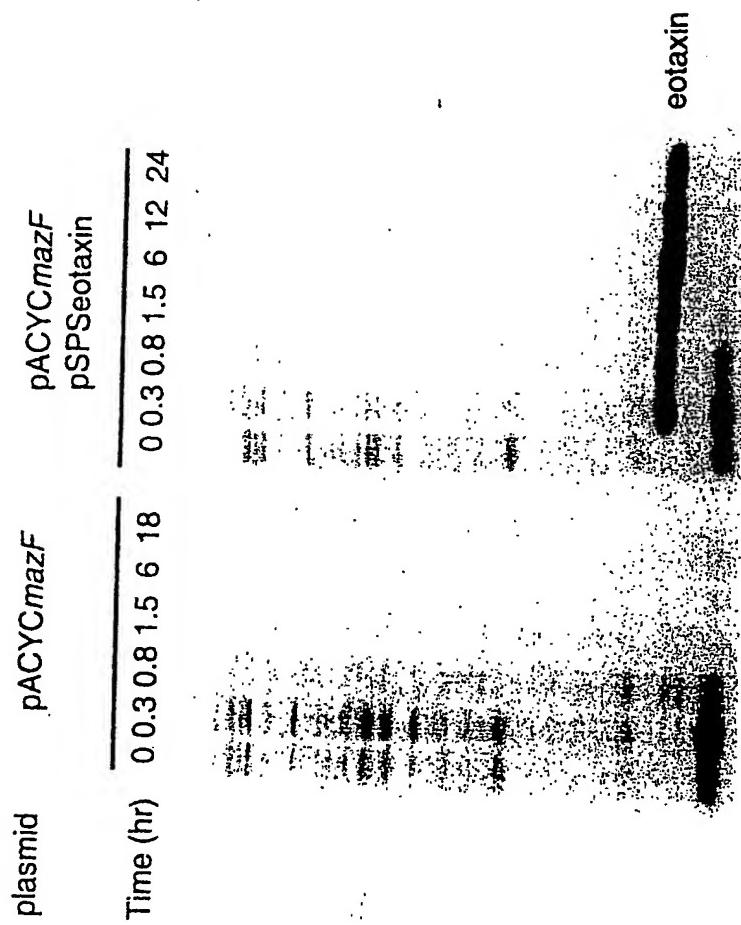


FIG. 37

FIG. 38A

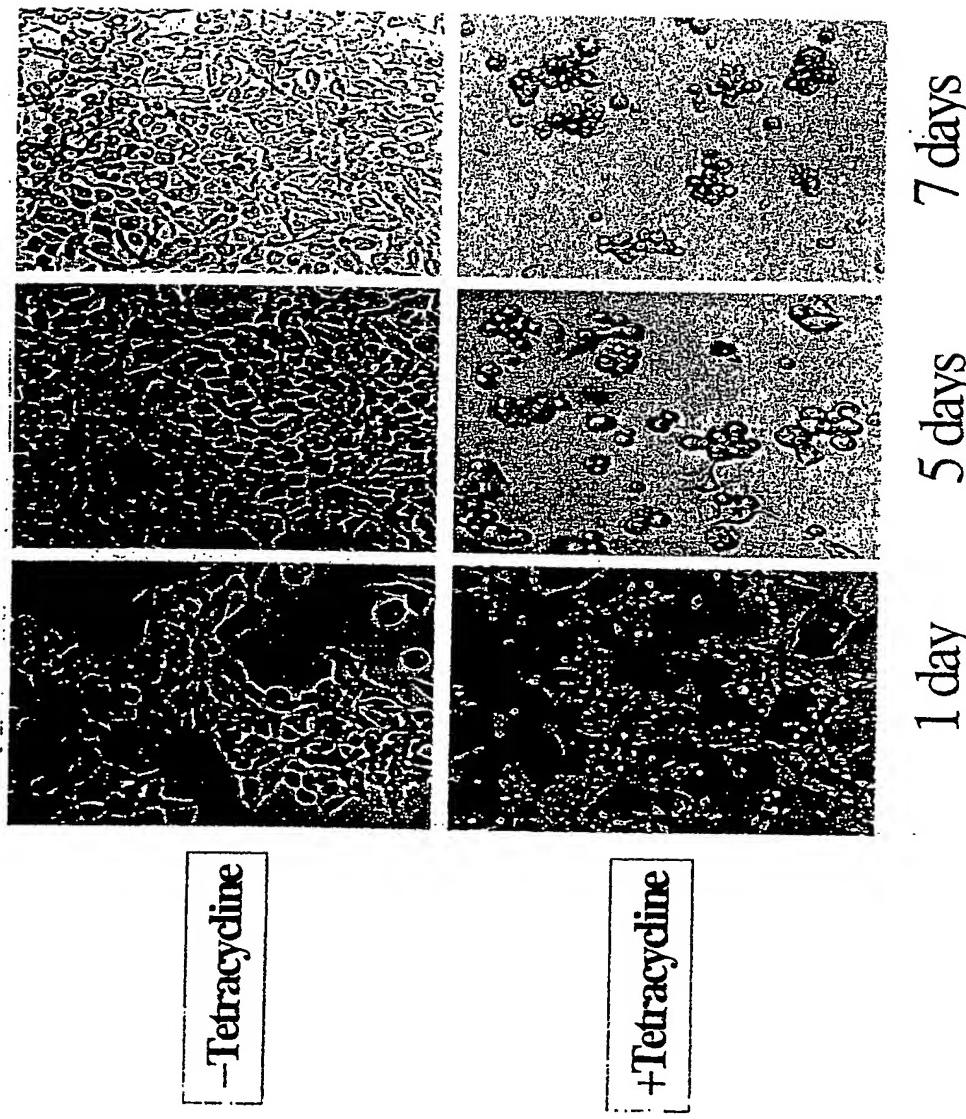


FIG. 38B

FIG. 38C

FIG. 38D

FIG. 38E

FIG. 38F

1 day 5 days 7 days

FIG.39A

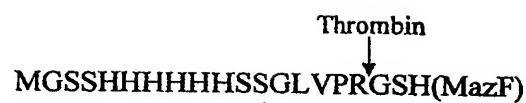
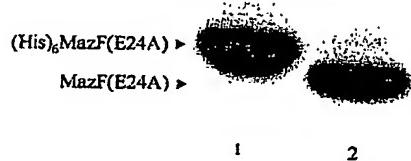


FIG.39B



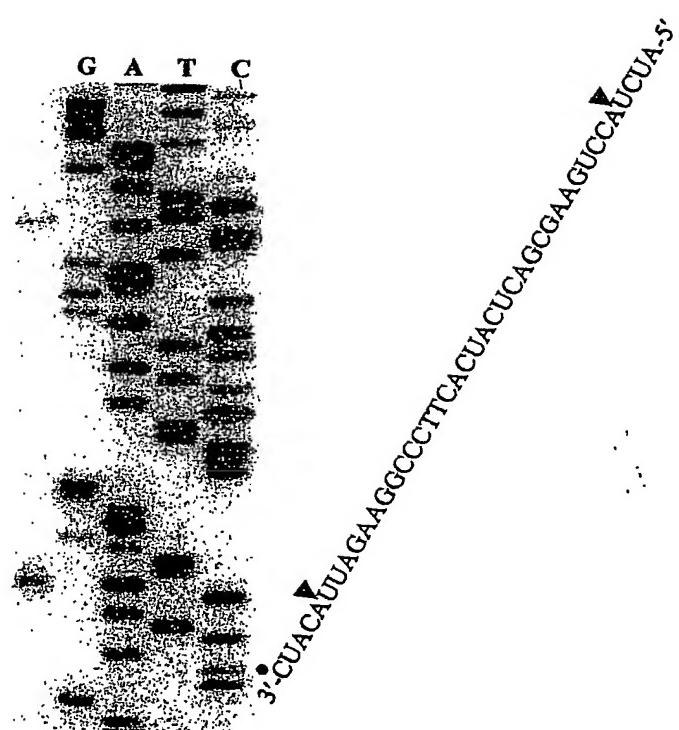


FIG.40

FIG.41A

Rv0456A	1	-----MLRGEIWQVDLD PARGSAANMRRPAIVVSNDRANAAAIRLDRGV
Rv2801c	1	-----MMRRGETWQVDLD PARGSEANNOHRPAVVVSNDRANATATRLGRGV
MazF	1	MVSRYVPDMGDLIWVDFDPTKGSSEQAGHRPAVVLSPEMYNN-----KTGM
Rv1991c	1	-----MVISRAEIXWADLGPPSGSQPAKRRPVLVIQSDFYNAS-----RLAT
Rv0659c	1	-----MRRGELWEAAT-----PGGDPRPVLVITRDPVAD-----RIGA
Rv1942c	1	---MTALPARGEVWWCEMA-----BIGRRPVVVLSRDAATP-----RLRR
consensus	1	-- l rgevw w em grRPvvvls da -----x1

Rv0456A	45	VPPVVPVT SNTEKVPIPGVVAGSERWPGRRFEGAGPAGWIRRCATSPLPS-
Rv2801c	46	ITVVPVTSNIAKV-YPFQVLLSATTTGLQVDCCKRAQAEQIRSIATERLLRP
MazF	46	CLCVPCTTOSKGY--PFEVVLS---GQERDGVALADQVKSIAWRARGAT
Rv1991c	43	VIAAVITSNTALAAMPGNVFLPATTRLPRDSVVNVTAIVTLNKTDETDR
Rv0659c	33	VVVVVALTRTRRGLVSELELTAVEN--RVPSDCVVFNDNIHTLPRTAFFRR
Rv1942c	38	ALVAPCTTIRGLASEVVLEPGSD---PIPRRSASAVNLDSVESVSVALEVNR
consensus	51	lv p tt rgl 1 s -- ipr vr d v svb 1 x

Rv0456A	95	-----
Rv2801c	95	IGRVSAEELAQDDEALKLHLDLWS
MazF	90	KKGTVAPEEELQLIKAKINVLIKIG--
Rv1991c	93	VGEVPASLMHEVDRGLRRVLDL--
Rv0659c	81	ITRISPARLHEACQTLLRASTTGC--
Rv1942c	86	LGRLADIRMRMATICTALEVAVDCSR
consensus	101	lgrla mr i al vd

FIG.41B

B.subtilis	1	----MIVKRGDVYFADLSPVVGSEQGGVRPVVLVIQNDIGNRFSETAIVAA
B.anthracis	1	----MIVKRGDVYFADLSPVVGSEQGGVRPVVLVIQNDIGNRFSETVIVAA
S.aureus	1	----MIRRGDVYLADLSPVQGSEQGGVRPVVIIQNDTGNKYSEPTVIVAA
E.coli	1	MVSRYVPDMGDIIWVDFDPTKGSEQAGHRPAVVLSPEMYNN--NRTGMCLC
consensus	1	v GD1 w D P GSEQaG RP vvl m N Tgm

B.subtilis	47	ITAQIOKAKLPTEVEIDAKRYGFERDSVILLEQIRTIDK-QRLTDKITHL
B.anthracis	47	ITAQIOKAKLPTEVEIDAKKYGFERDSVILLEQIRTIDK-QRLTDKITHL
S.aureus	46	ITGRINKAKIPTHEVEIEKKKYKLDKNDSVILLEQIRTLDK-KRLKEKLTYL
E.coli	49	VPCTTOSKGYPFEVVL-----GQERDGVALADQVKSIAWRARGATKKGT
consensus	51	v q p v 1 g erD v L dQvksi R K v

B.subtilis	96	DDEMMDKVDEALQISLALIDF-----
B.anthracis	96	DEVMMIRVDEALQISLGLIDF-----
S.aureus	95	SDDKMKEVDNALMISLGLNAVAQPEKLGVYYMFSEINKILI
E.coli	95	APEEEHQLIKAKINVLIKIG-----
consensus	101	a e l i inv ig -----

M V S R Y V P D M G D L I W V D F D P T
AUG GUA AGC CGA UAC GUA CCC GAU AUG GGC GAA CUG AUU UGG GUU GAA UUU GAC CGG AUC
A K G S E Q A G H R P A V V L S P F M Y N
AAA GGU AGC GAG CAA GCU GGC C/U CGU CCA GCU GUU GUC CUG AGU CCU UUC AUG UAU AUC
A N K T G M C L C V P C T T Q S K G Y P F
A/G UAA ACC GGU AUG UGU CUG UGU GUU CCU UGU AGC ACG CAA UCA AAA GGA UAU CGG UUC
C C
C A
E V V L S G Q E R D G V A L A D Q V K S
GAA GUU GUU UUA UOC GGU CAG GAA CGU GAA GGC GUA GCG UUA GCU GAA CAG GUA AAA AGU
I A W R A R G A T K K G T V A P E E L Q
AUC GCC UGG CGG GCA AGA GGA GCA ACG AAG AAA GGA K/G GUU GCC CCA GAG GAA CUS C/A
A
L I K A K I N V L I G
CUC AUU AAA GCC AAA AUU AAC GUA CUG AUU GGG UAG

FIG.42

FIG. 43A nucleic acid sequence of Mazf-mt1 (NP_217317) (SEQ ID NO: 69)

```
gtgatgcgcc gcgggtgagat ttggcaggtc gatctcgacc ccgctcgagg tagcgaagcg  
aacaaccaggc gccccggcgt cgtcgcatcgc aacgaccggg ccaacgcgc acgcccacgcgt  
cttggccgcg cgcatcgatcac cgtcgatcccg gtgacgagca acatcgccaa ggtctatccg  
tttcagggtgt tgggtcgcc caccactact ggtctccagg tcgactgcaa ggccgcaggcc  
gagcaaatca gatcgattgc taccgagccg ttgctccggc caatcgcccg agtttcagcc  
gccgaacttg cccagctcga tgaggctttg aaactgcata tcgacttatg gtcgttag
```

FIG. 43B nucleic acid sequence of Mazf-mt2 (CAE55283) (SEQ ID NO: 70)

```
atgctgcgcg gtgagatctg gcagggtcgac ctggatccgg cccgcggcag cgcggcaaat  
atgcggccgc cagcggtaat tgtcagcaac gacaggggcca acgctgcgcg gatacgtctc  
gaccgaggcg tgggtcgccgt tggccgggtt accagcaaca ccgaaaaggt ccccaattcca  
ggtgttggatcc cccgcgcgaa gccgtggcct ggccgtcgat tcgaaggcgcc aggcccagca  
gttggatcc gtcgctgcgc aacgtctccc ctgcccagct ga
```

FIG. 43C nucleic acid sequence of Mazf-mt3 (CAA98393) (SEQ ID NO: 71)

```
gtgggtgatta gtcgtgccga gatctactgg gctgacacctcg ggccgcacatc aggcagtctag  
ccggcgaagc gcccggccgt gctcgtaatc cagtcagatc cgtacaacgc aagtgcgcott  
gccactgtga tcgcagcggt gatcacgtcc aatacggcgcc tggccggcaat gcccggcaac  
gtgttcttgc cccgcaccac aacgcgactg ccacgtgact cggtcgtcaa cgtcacggcg  
attgtcacgc tcaacaagac tgacctcacc gaccgagttg gggaggtgcc agcgagcttg  
atgcacgagg ttgaccgagg acttcgtcgatc gtactggacc tttga
```

FIG. 43D nucleic acid sequence of Mazf-mt4 (CAB09387) (SEQ ID NO: 72)

```
atgcggccgcg gtgaatttgtt gtttggccgc acacctgggt gtcgacagacc agtacttgtc  
cttaccagag atccgggtggc agaccgcac ggcgcgggtcg ttgtgggtggc cctaaccgc  
acccggccgag gcctgggtgtc ggaattggag ctcacggccg tcgaaaaccg tggtccgagc  
gactgcgtcg tcaacttcga caacattcat acgttgcac gcaccgcatt ccgacgcgc  
atcaccggc tggccggcgc ccgcctgcac gaaggctgtc aaacactccg ggcgagcacc  
gggtgttga
```

FIG. 43E nucleic acid sequence of Mazf-mt5 (CAB06519) (SEQ ID NO: 73)

```
gtgaccgcac ttccggccgcg cggagagggtg tgggtgggtg agatggctga gatcggtcg  
cgaccagtcg tgggtcgatc ggcgcgtgc ggcgtccctc ggctgcgcacg cgcacttgtc  
gcgcctgcac ccacgaccat ccgagggtca gccagtgagg ttgttcttgc accccgggtcc  
gaccgcgtcc cggccgttc cgggtgaat ttggactca gtcgaaagtgt ctcgggtcg  
gtattgggtga atccggcttgg ccgcctgcac gacatccgga tgcgcgcatt ctgcacggcc  
ctcgagggtcg ccgtcgatttgc ctctcgatga
```

FIG. 44A amino acid sequence of Mazf-mt1 (NP_217317) (SEQ ID NO:74)

MMRRGEIWQV DLDPARSGSEA NNQRPAVVVS NDRANATATR LGRGVITVVP VTSNIAKVYP
FQVLLSATTT GLQVDCKAQAA EQIRSIATER LLRPIGRVSA AELAQLDEAL KLHSDLWS

FIG. 44B amino acid sequence of Mazf-mt2 (CAE55283) (SEQ ID NO:75)

MLRGEIWOVD LDPPARGSAAN MRRPAVIVSN DRANAAAIRL DRGVVPVVVPV TSNTEKVPPIP
GVVAGSERWP GRRFEGAGPA GWIRRCATSP LPS

FIG. 44C amino acid sequence of Mazf-mt3 (CAA98393) (SEQ ID NO:76)

MVISRAEIYW ADLGPPSGSQ PAKRRPVLCI QSDPYNASRL ATVIAAVITS NTALAAMPGN
VFLPATTTTRL PRDSVVNVTA IVTLNKTDLT DRVGEVPASL MHEVDRGLRR VLTL

FIG. 44D amino acid sequence of Mazf-mt4 (CAB09387) (SEQ ID NO:77)

MRRGELWFAA TPGGDRPVLV LTRDPVADRI GAVVVVALTR TRRGLVSELE LTAVENRVPS
DCVVNFNDNIH TLPRTAFRRR ITRLSPARLH EACQTLRAST GC

FIG. 44E amino acid sequence of Mazf-mt5 (CAB06519) (SEQ ID NO:78)

MTALPARGEV WWCEMAEIGR RPVVVLRSRDA AIPRLRRALV APCTTTIRGL ASEVVLEPGS
DPIPRRSAVN LDSVESVSVA VLVRNLGRLA DIRMRAICTA LEVAVDCSR

Figure 45A nucleic acid sequence of *Pseudomonas putida* Pem-like gene (KT2440) (SEQ ID NO: 81)

```

gtgaa acggttgaaa ttgcgccaggg gtgatattgt
tcgcgtcaac ctggacccaa cagtcggcg ggaacacgcg ggctccggcc gacactgcact
ggtacttact ccggctgcgt tcaatgccttc aggccctggct gtaatcatcc cgatcactca
aggtggggat ttgcgcaggc atgcgggtt cgctgtcacg ctcagcggtg cgggcacgc
gactcagggg gtgatgcctt gcaaccaggc gcgcacagtc gaccttgaag cacgatttgc
caagcgcata gagtcggtgc ctgaagctgt catcctggat gcaactggcgc gtgtgcaaac
cctattcgat taa

```

Figure 45B nucleic acid sequence of *Mycobacterium celatum* Pem-like gene (SEQ ID NO: 82)

```

t gaattgcctc gacggaacgc
ggcgacatct acatcgtttc gcttgaccgg acgtcgggac atgagcagag cggcacgcgc
ccagtattgg tcgtgtcccc gggcgcggtt aatgcctga cggaaaacacc ggtcgctgcta
cctataaacac gggcgggaa ctttgcccgaa acggcagggt tcgctgtctc gctgaccgat
gggggtactc gcaccgcggc cgtaataacgc tgcatcgc ctcgctcgat tgatatccgc
gcccgtaaag gcccgaagg tgaacgtgt ccgtctgggg ttcttgacga agcgttggcc
aagctcgcca cgatcttgc ttga

```

Figure 45C nucleic acid sequence of *Shigella flexneri* 2a str. 301 Pem-like gene (SEQ ID NO: 83)

```

atggtaaaag gcacggacgc
cacatcggtt tgagatctgg tatttttaacc ctgatccggt tgccggcat gaacttcagg
ggccacatta ttgcattgtg gtaacggaca aaaaactcaa caatgttttta aaagttgcta
tgtgctgccc gatttcaaca ggggcaaatg cagcacgttc cacaggggtg acggtaacg
tcctcccccg tgataacgcaa accggtaacc tgcatggcgt tgtactttgt caccagctaa
aagccgtcga tcttattggc cgtggcgcta aatttcatac cgttgcgtt gaaaaattga
ttagtgaagt tatcagtaaa ctggtaatt taatcgaccc acaataa

```

Figure 45D nucleic acid sequence of *E. coli* ChpBK (SEQ ID NO: 84)

```

atgtt aaagaaaaatg gaatttgaac
ggggagacat tgtgctgggtt ggctttgatc cagcaagcgg ccatgaacag caaggtgctg
gtcgacctgc gcttgtgctc tccgttcaag ctttaatca actggaaatg acgctgggtgg
ccccccattac gcagggcgga aattttgcgg gttatgcgg atttagcgtt ctttacatt
gcgaagaagg cgatgtcac ggcgtgggtgc tggtaatca ggtgcggatg atggatctac
acgcccggct ggcaaaacgtt atggcttggc ctgcggatga ggtgggtggaa gaggcggttat
tacgcttgcg ggcgtgggtg gaataa

```

FIG. 46A amino acid sequence of *Pseudomonas putida* KT2440 Pem-like protein (SEQ ID NO: 85)

MKRLKFARGD IVRVNLDPTV GREQQGSGRP ALVLTPAAFN ASGLAVIPI TQGGDFARHA
GFAVTLSGAG TQTQGVMLCN QVRTVDLEAR FAKRIESVPE AVILDALARV QTLFD

FIG. 46B amino acid sequence of *Mycobacterium celatum* Pem-like protein (SEQ ID NO: 86)

MTERGDIYIV SLDPTSGHEQ SGTRPVLVVS PGAFNRLLKT PVVLPITRGG NFARTAGFAV
SLTDAGTRTA GVIROCDQPRS IDIRARKGRK VERVPSGVLD EALAKLATIL T

FIG. 46C amino acid sequence of *Shigella flexneri* 2a str. 301 Pem-like protein (SEQ ID NO: 87)

MVKARTPHRG EIWFNPDPV AGHELOGPHY CIVVTDKKLN NVLKVAMCCP ISTGANAARS
TGTVTVNLPR DTQTGNLHGV VLCHQLKAVD LIARGAKFHT VADEKLISEV ISKLVNLIDP
Q

FIG. 46D amino acid sequence of *E. coli* ChpBK (SEQ ID NO: 88)

MVKKSEFERGDIVLVGFDPASGHEQQGAGRPAVLVSVQAFNQLGMTLVAPITQGGNFARYAGFSVPLHCEEG
DVHGVVVLNVQRMMDLHARLAKRIGLADEVVEALLRLQAVVE

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